FIRE ENGINEERING

OCTOBER
1960

The Journal of the Fire Protection Profession Since 1877

A Reuben H · Donnelley Publication

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...teen land units and two fireboats of the Vancouver, B. C., Fire Department brought massive fire in lumber plant (see red area) under control in less than 3½ hours. Underwriters had previously scored the potential conflagration hazard of the area. Story on page 894

MAXIM *announces*

the new "∫" model

the new ∫ model gives you

same wheel base as cab ahead
same components as cab ahead
same body size as cab ahead
same turning radius as cab ahead

plus these new ∫ model features

shorter overall turn than cab ahead
conventional engine in front design
shorter overall length than cab ahead

MAXIM MOTOR COMPANY
Builders of the World's Finest Motor Fire Apparatus
MIDDLEBORO, MASSACHUSETTS

THE GREAT-EST PACK-AGE EVER!

For every Fire Chief . . .

The *new* INTERCEPTOR

FEDERAL PA-10

50-watt mobile combination

- Real coaster siren tone
- Quick pick up
- Long roll
- Brake action
- Super voice quality
- Powerful, compact, durable
- All connections plug in
- Choice of 4 speaker styles
- No increase in price

Write for Federal Bulletin #325

FEDERAL SIGNAL SIGN and Corporation

13602 S. Western Av., Blue Island, Ill.

FIRE
ENGINEERING

VOL 113 OCTOBER, 1960 NO. 10

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Technical Support Service

From time to time students of fire fighting techniques have endeavored to pin down in tangible terms the efficiency of various fundamental tasks performed by firemen in the course of attacking and extinguishing fires. While time and manpower studies have been conducted in the past, very little recorded data is available to support the presently accepted conclusions of the service.

The November issue of FIRE ENGINEERING will contain a study of two basic engine and truck company evolutions which were recently conducted by the Wisconsin Fire Training Research Section. The results are very interesting and tend to fortify the claims made by fire chiefs and fire protection engineers in the past concerning proper manpower for fire companies.

We believe the article is a definite contribution to the ever-growing wealth of fire service technical literature and it is our pleasure to present it as a service to our readers.

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Continuous Uniform
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Co-Axially Spun Fire Hose

Spun formed to these PERFORMANCE specifications

ZERO TURNS ZERO RISE

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IN CANADA *Pierre Thibault* CANADA, LTD., LTEE., PIERREVILLE, QUEBEC

They're BOTH WINNER

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INDIAN FIRE PUMPS lead the race right down to the finish line! That's because they are a product of a company established in 1888 with advanced design and dependable performance built into every part. Despite being banged around and roughly handled, many **INDIANS** 25 years old are still in service extinguishing all types of small fires.

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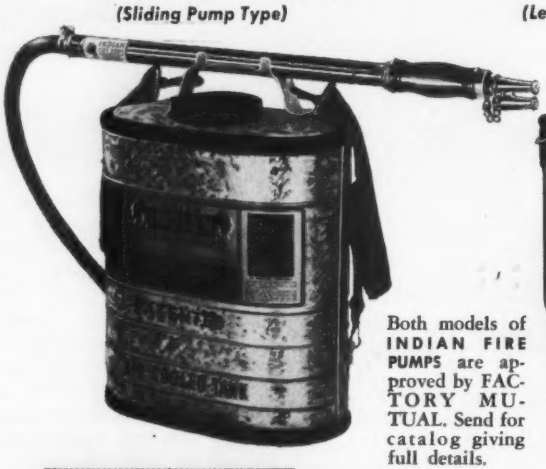
(Sliding Pump Type)



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"We have controlled a good many grass and brush fires with **INDIAN FIRE PUMPS** when we could not get to them with our hose lines. We wish we could be issued more **INDIANS** and say that they **ARE A NECESSITY FOR EVERY FIRE DEPARTMENT.**"

Earl C. Passon, Chief
Norton Fire Department
Norton, Kansas

Send for folder describing **NEW FIBERGLAS NO. 90 INDIAN FIRE PUMP.** Light weight. Will not rust or corrode. Solid brass pump.

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Photo courtesy Petersburg, Virginia Fire Department.

The hose that doesn't blow out when you need it most

Long-lasting B.F.Goodrich hose pays off when the pressure's on

"DOESN'T blow out when you need it most"—that's the main reason B.F.Goodrich hose is used exclusively by the Petersburg, Virginia Fire Department.

Chief J. N. Farmer goes on to say, "I first bought B.F.Goodrich hose in 1941, and have not bought any other brand since then. BFG hose is stronger. We've never had a length of it blow out under pressure. I think it lasts at least twice as long as any other hose available."

Chief Farmer is right. B.F.Goodrich hose is stronger, and at the same time, lighter, more flexible, too. That's because of the "filler" cords of Dacron fiber which go around the hose and carry the load under pressure. Dacron cords are thinner, and three times stronger than cords used in ordinary hose. As a result, B.F.Goodrich hose not only lasts longer, but is easier to handle, coils tighter, is more compact. Hundreds of extra feet can be racked on a truck.

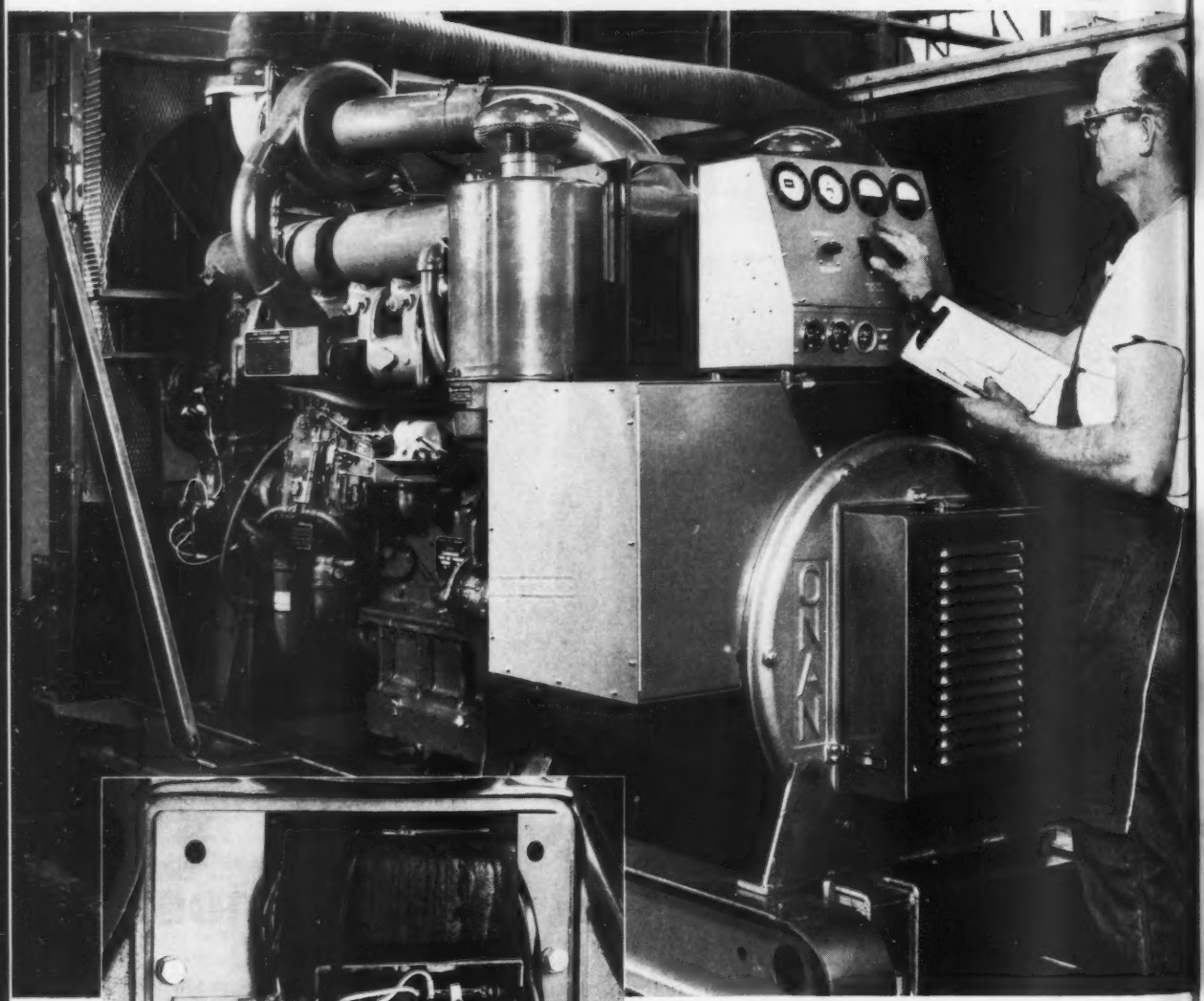
The extra minutes needed to get heavy, bulky hose into action, or replace a blown out section or put on more hose for longer lines are all it takes to wipe out the money saved on so-called "just as good as" hose. The quality features in B.F.Goodrich hose that prevent these delays add only a few cents per foot to its cost, but are worth much more when the pressure's on.

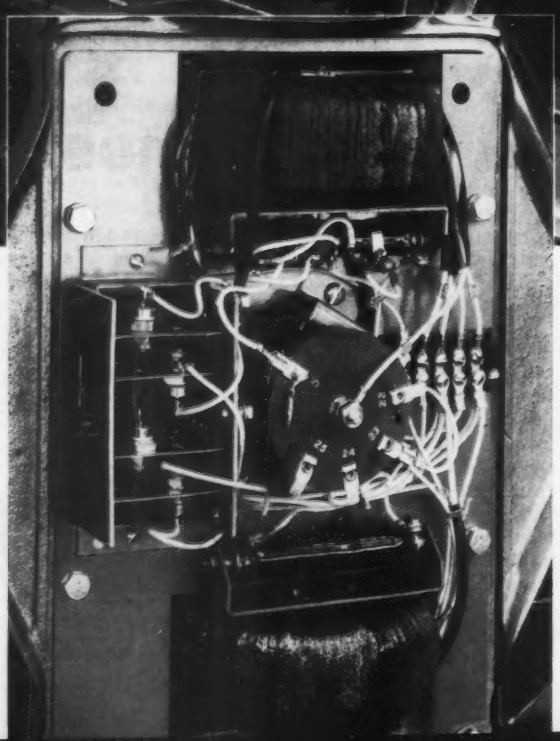
Next time you need fire hose, be sure and talk to a B.F.Goodrich distributor before you buy. You'll save money with longer-lasting BFG hose. *B.F.Goodrich Industrial Products Co., Dept. M-919, Akron 18, Ohio.*

B.F.Goodrich

FIRE HOSE

Pour on the load!
recovers voltage





Use Magneciter-equipped Onan for standby or primary power. Takes maximum starting load without hesitation! Available on all diesel and gasoline-powered Onan Electric Power Plants rated at 25 KW and up.

Static exciter and magnetic amplifier and regulator of Magneciter Generator with cover removed. No moving parts in this *static* exciter and regulator. No extra sensitive adjustments needed. Magneciter means reliability!

Onan Magneciter
within 1 second

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It's no longer necessary to buy a generator much larger than your normal power needs just to get enough extra power for the heavy drain of starting motors. Onan gives you this margin of power, builds it into every Magneciter-equipped Onan Electric Plant.

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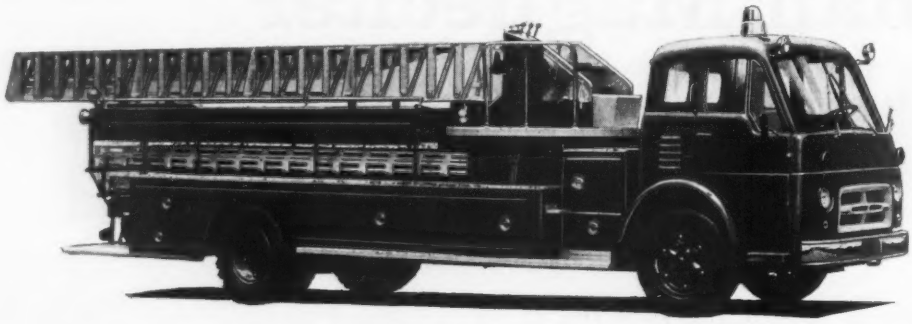

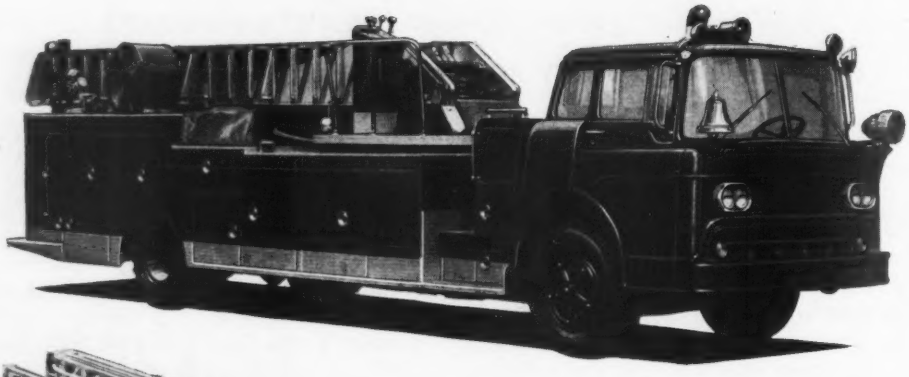

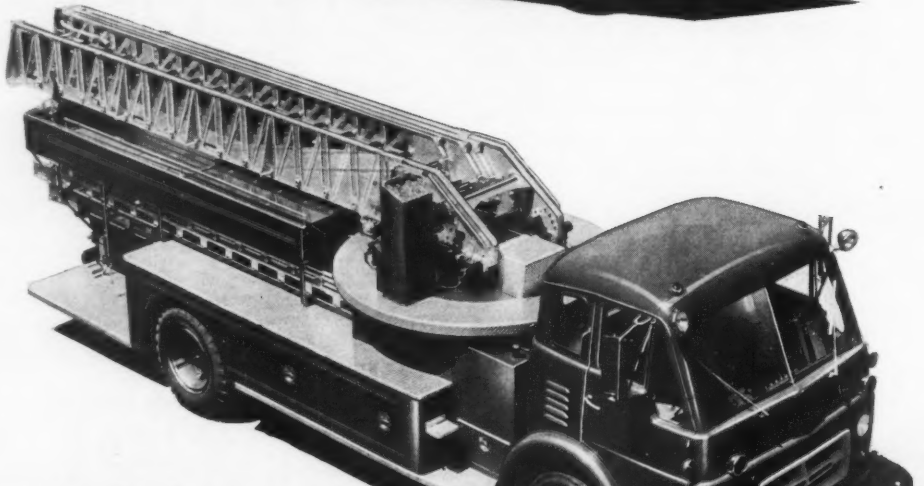

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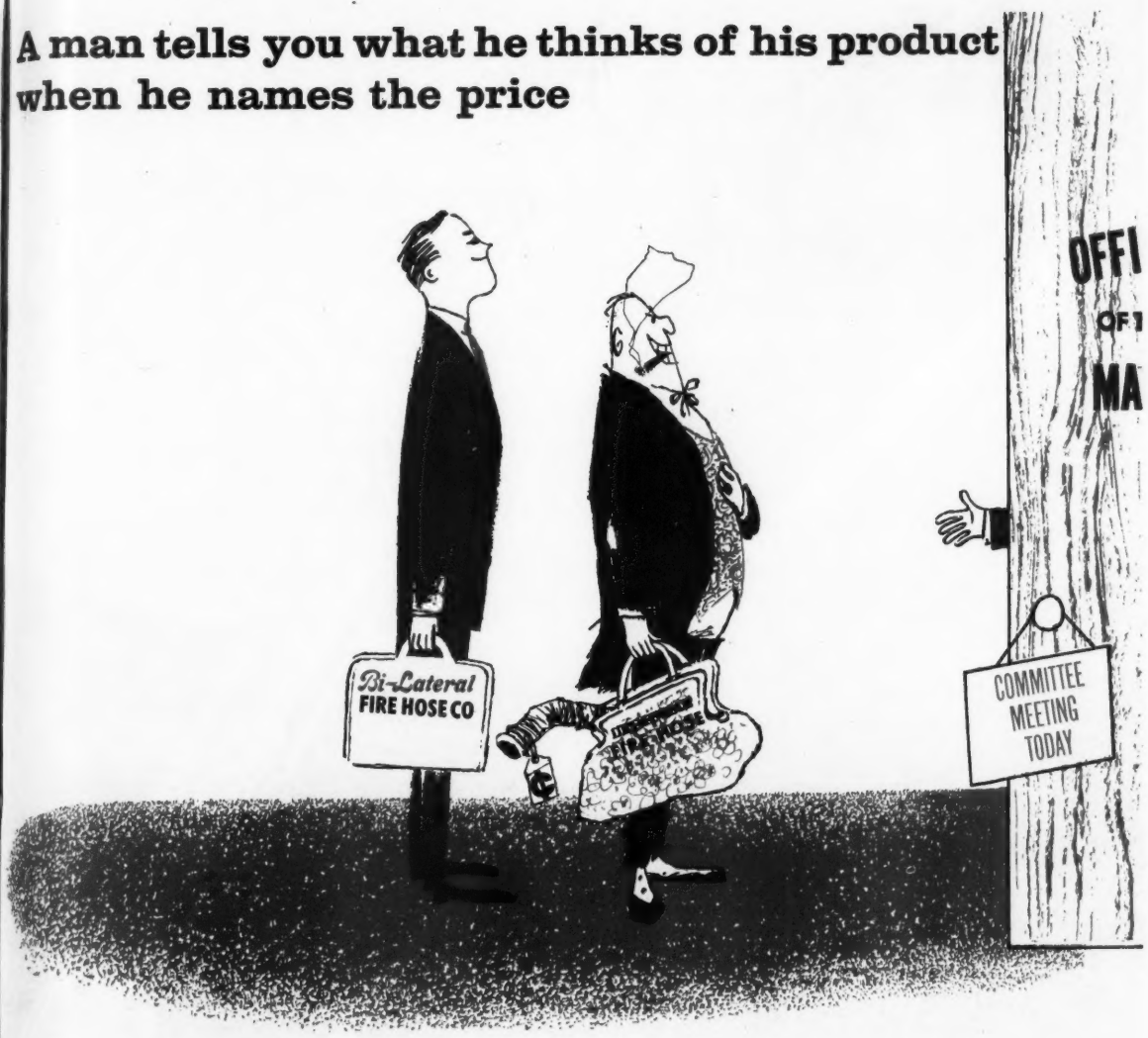
Builds the Finest

Pirsch has specialized in producing quality fire department ladders for about three quarters of a century; you profit from this experience when you buy a Pirsch aerial ladder. In addition to the finest built, you get smooth, efficient hoist and ladder operation, ease of control and dependable performance.

Pirsch custom and commercial aerial ladder trucks are built in 65', 75', 85' and 100' sizes.

PETER PIRSCH & SONS CO. KENOSHA, WIS.

A man tells you what he thinks of his product when he names the price



"... It is unwise to pay too much, but it's worse to pay too little ... When you pay too little, you sometimes lose everything ...

"There is hardly anything in the world that some man cannot make a little worse and sell a little cheaper, and the people who consider price only are that man's lawful prey."

—John Ruskin

Bi-Lateral will *not* sacrifice quality to be low bidder. Fire Departments take pride in their equipment and in their efficiency record. Our *first* concern is to see that they get the proper, *reliable* tools to work with.

Your Bi-Lateral Representative will be very happy to explain to you how you save lives and money with Bi-Lateral Fire Hose—Bi-Lateral "Aquaseal" mildew protection; reinforced ends and point-of-fold reinforcement. He can also explain Bi-Lateral *Hose Record Cards ... proof* of Bi-Lateral's superiority.

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COMPLETE LINE OF PUMPERS—500 to 1250 GPM...SQUAD AND HOSE WAGONS...AERIALS 65' to 146'...COMBINATION LADDER TRUCK

This is how you measure

Dependability of a Mack gasoline or diesel engine

When it's 15° below and ice forms as the water hits, or whenever fire apparatus must face the extreme demands of fire fighting, that's the time to get the full measure of an apparatus' engine performance.

Does it start dependably . . . have the reserve power for the most grueling operations in any climate and terrain . . . pump hour after hour for as long as needed?

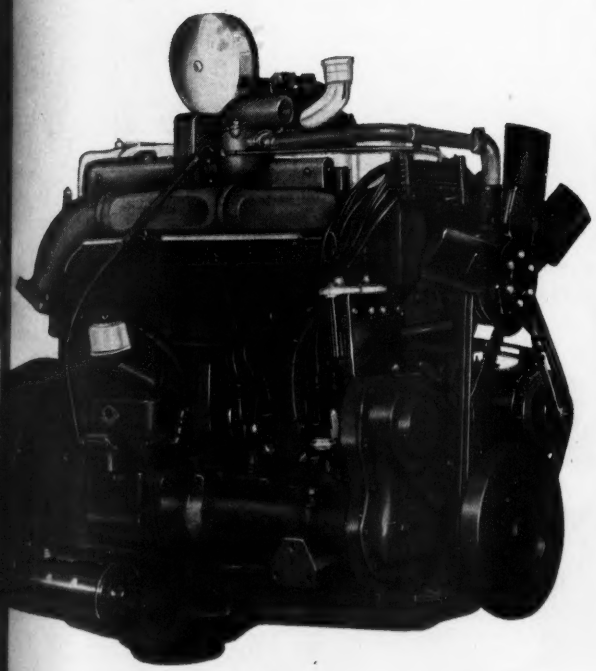
Thermodyne® engines that power Mack fire apparatus, both gasoline and diesel, meet every fire-fighting assigment because they've got the stamina that's made Thermodyne synonymous with dependable, powerful, high-output performance.

This is the stamina that stems from Mack engineering know-how and Mack's many powerplant advances—Everlasting timing gears . . . Durafaced valve lifters . . . full-length water jackets . . . and gear-driven air compressor.

Select your next fire apparatus and the engine that powers it to meet the most demanding assignment you'll ever face, and you'll specify Mack fire-fighting equipment powered by one of the world-famous Thermodyne engines. Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario.

7935

Mack offers three Thermodyne engines to best meet your requirements



Model ENF-707C Gasoline. Largest and most powerful of Mack-built Thermodyne fire apparatus engines, this 707 cu. in. powerplant develops 276 hp. High volumetric efficiency is achieved through opposite intake and exhaust porting and Mack's exclusive combustion chamber design.

Model ENF-540 Gasoline. For smaller apparatus and where the higher horsepower of the 707 cu. in. engine is not needed, Mack offers this 540 cu. in. engine which nevertheless delivers in excess of 200 hp at moderate rpm. It has all the design and engineering features that have made Thermodyne the first name for fire apparatus powerplants.

Model ENDT-673 Diesel. Already proved in millions of miles on the nation's highways, the famed Mack Thermodyne diesel engine is finding increased interest for fire apparatus where its many advantages make it the ideal powerplant. These advantages include: complete absence of an ignition system with its accompanying spark plug, breaker point and coil maintenance complications . . . fuel of lower flash point, hence a safer fuel . . . 24-volt electrical system for quicker, surer starts . . . high torque at low speeds . . . and, for departments where superior fuel economy is important, more work out of less fuel with a diesel engine. Developing 230 hp, the Turbocharged Thermodyne is finding new boosters among fire departments everywhere.

MACK FIRST NAME FOR **FIRE APPARATUS**

"MY MEN DESERVE THE BEST"

" . . . Each one puts his life on the line every time he answers an alarm. They *must* take chances, so I *cannot* take chances in selecting their equipment. There's too much at stake!

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"When our radio needs maintenance—I want it NOW. We can't afford outages. I want a factory-trained man on the spot when we need him—but, we had better not need him too often . . .

"Make? Like most fire departments, we chose the one that measures up to firemen's requirement—Motorola."

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2-WAY FIRE RADIO

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A Subsidiary of Motorola Inc.

New WOOSTER UNI-FLO NOZZLE *simplifies fire fighting*

Wooster Uni-Flo Nozzles deliver the same GPM on all settings—straight stream and 15, 30, 60 and 90° fog patterns. Standardizing on Uni-Flo Nozzles makes firemen-training easier . . . simplifies and advances your fire-fighting technique. The man at the pumper knows exactly how much water to deliver at the nozzle, no matter what the nozzle setting. And the man at the nozzle can meet every fire situation by switching from straight stream to any fog setting, knowing exactly what pattern and stream force he will get. Wooster Uni-Flo Nozzles are ruggedly constructed to minimize wear and breakdown. Should service be needed, parts can be replaced in minutes without special tools.

You can select Uni-Flo Nozzles for hose in sizes from ¾″ to 2½″ and capacities from 18 to 250 GPM. The same sizes are also available as Uni-Flo Nozzle Tips for convenient "break-apart" use (as illustrated). Uni-Flo Nozzles and other Wooster brass fire equipment are available from Fyr-Fyter, Pyrene-C-O-Two and Buffalo industrial distributors and fire equipment specialists. Look for their local listings in your Yellow Pages under "Fire Protection Equipment." Or write to The Fyr-Fyter Company, Dayton 1, Ohio.

Chromed hard baffle plate and perforated edge produce dense, uniform fog patterns.

Non-slip rubber grip extends over edge to protect against impact.

Five positive, click-stop stream positions . . . entirely enclosed, can't freeze.

Smooth, easy turning at all pressures.

Rugged, rigid stream setting indicator.

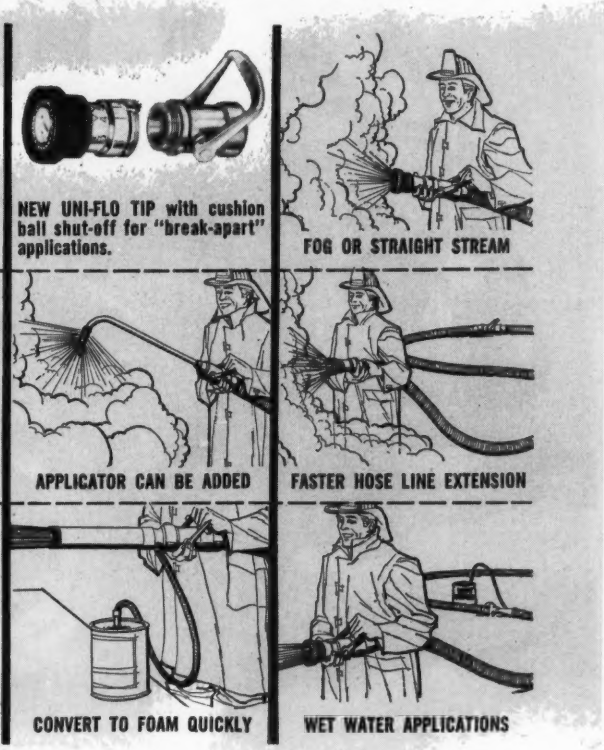
Cushion-ball shut-off control . . . easy action under all pressures.

Full diameter, non-interrupted waterway minimizes friction loss.

Double-stop provides positive valve alignment, open or closed.

Design minimizes clogging . . . clogging is easily freed.

New wide handle for gloved-hand operation.


NEW UNI-FLO TIP with cushion ball shut-off for "break-apart" applications.
FOG OR STRAIGHT STREAM
APPLICATOR CAN BE ADDED
FASTER HOSE LINE EXTENSION
CONVERT TO FOAM QUICKLY
WET WATER APPLICATIONS

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INTERNATIONAL LEAPS INTO ACTION WITH DUAL IGNITION!

Dependability is built into INTERNATIONAL Fire Truck Chassis—right from the word go!

V-8 powered models now give you and your community the doubly sure action of dual-ignition engines. You can fire both sets of plugs simultaneously, or either set individually, by turning a switch. And these sure-fire engines deliver dependable pumping power with up to 257 hp., capacities up to 1,250 gpm.

INTERNATIONAL tilt-cab design provides easy engine access—and gives a driver close-up vision for complete command of the road. He can "see farther" into a turn or across an intersection. Optional Select-O-Matic transmission eliminates clutch pedal, reduces shifting time. It's so simple to operate, *anyone* can take the wheel!

There's a wide range of INTERNATIONAL chassis, from heavy-duty models to light-duty rescue and disaster units. For the right model for *your* needs, and expert help in making your selection, see your nearby INTERNATIONAL Truck Dealer or Branch.

Split-second starts, plus safe vision and easy handling every minute of the way

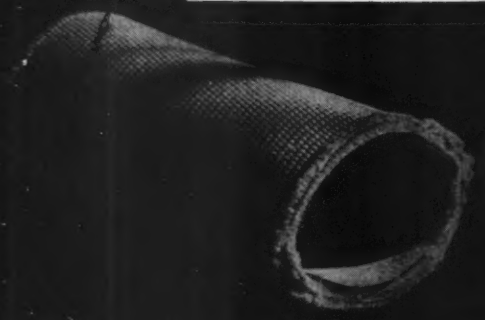
INTERNATIONAL V-8 chassis offer you a choice of *three* heavy-duty V-8 engines—401, 461 and 549 cu. in. displacement. Get dual ignition in the two large sizes, 461 and 549 cu. in. . . . like the power available in this INTERNATIONAL model VCO-206 tilt-cab chassis shown here. A wide selection of axles, transmissions and other major components tailors these popular fire truck chassis for a variety of ladder and hose equipment and pumping apparatus.

INTERNATIONAL® TRUCKS

WORLD'S MOST COMPLETE LINE

International Harvester Company, Chicago • Motor Trucks • Crawler Tractors • Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors

WEIGH THE FACTS— AND YOU'LL CHOOSE BOSTON HOSE!



COMPETITIVE FIRE HOSE
Less material — less wear

BOSTON FIRE HOSE
More material — far longer wear!

MORE OF THE FINEST YARNS MAKES BOSTON FIRE HOSE WEAR FAR LONGER —yet it handles and stores easily!

Common sense tells you: the craze for lightweight hose can go to extremes. You can sacrifice wear for weight. Take out material, and you lose durability.

So, we state proudly—BOSTON Fire Hose IS heavier. Because the extra weight is in the warp yarns. You get more wear for your money.

See your BOSTON agent or write to BOSTON for free descriptive literature

BOSTON FIRE HOSE

BOSTON WOVEN HOSE & RUBBER COMPANY
DIV. OF AMERICAN BILTRITE RUBBER CO. INC.
BOSTON 3, MASS.
ORIGINATORS OF CIRCULAR WOVEN FIRE HOSE

Seagrave CADMIUM PLATING

on all nuts, bolts and washers to prevent rust and corrosion.

Another one of the many Seagrave standard extra quality features at no extra cost to you.

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THE SEAGRAVE CORPORATION, COLUMBUS 7, OHIO. Please send complete information on:

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Name . . . . . Title . . . . .

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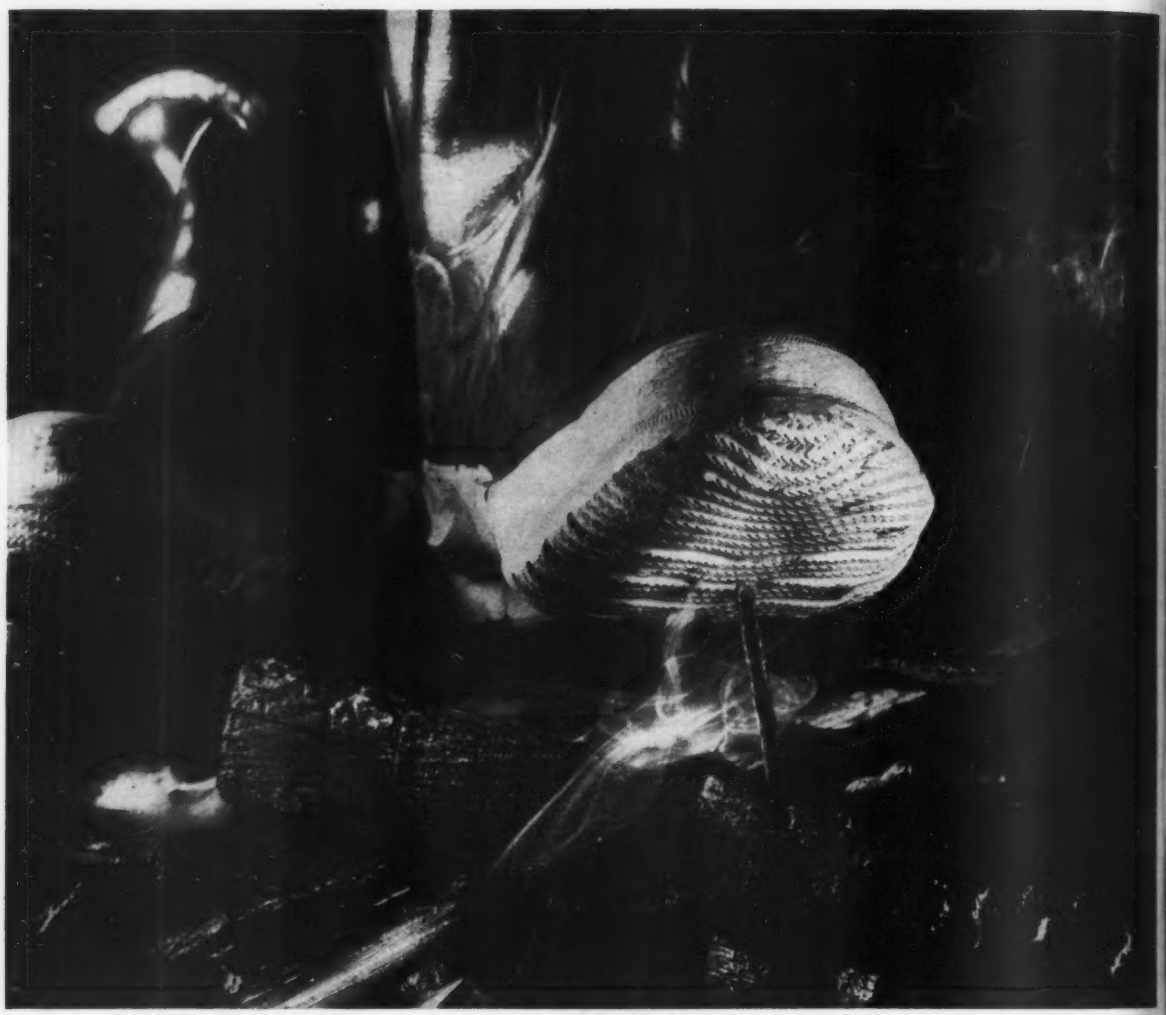
KING-SEAGRAVE LTD., WOODSTOCK, ONT.

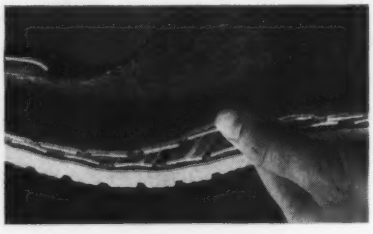


A quarter of an inch from danger

. . . but new flexible steel insole keeps feet safe in B.F.Goodrich and Hood Firefighter boot

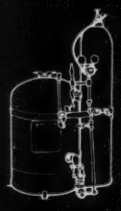
THAT sharp spike can't stab through the sole of *these* boots. Your feet are protected by overlapping steel plates buried in the flexible safety insole. New B.F.Goodrich and Hood *Firefighter* boots are also reinforced with an extra heavy toe cap, and have a non-slip sole that prevents nasty spills when it's slippery under foot. Both toe and sole are a brilliant white color for greater visibility.

Attention to small details in the construction of these *Firefighter* boots also makes a big difference in extra wear, comfort. To make boots last longer, there's an extra layer of rubber where boots ordinarily chafe. The inside knee band which receives the most flexing is made of neoprene, a special rubber that resists cracking. Straps and buckles are fully coated with rubber and securely anchored into body of the boot. Interior of boot is lined with soft felt to keep legs and feet warm. Outsole shank is especially designed to make feet more comfortable on ladders. And the leg is made extra wide so boot is easier to get on and off.



B.F.Goodrich and Hood *Firefighter* boots with the new flexible safety steel insole come in sizes 5-13, in short and Storm King height. For more information, call your BFG or Hood distributor; or contact *The B.F.Goodrich Company or Hood Company, Dept. F, Watertown 72, Mass.*

FIREMEN'S BOOTS BY B.F.Goodrich and Hood



257 of the 500 largest U.S. corporations rely on ANSUL for basic fire protection. Thousands of other companies, large and small, have found the right answers to their fire protection problems in Ansul's complete line of fire extinguishing equipment.*

We'll be happy to send you our latest catalog describing in detail Ansul's line of hand portable dry chemical, carbon dioxide and water extinguishers, wheeled, stationary, mobile units and automatic systems.

Your local Ansul Man is a trained fire protection expert, available to serve your plant and counsel on your fire protection requirements. Call him or an appointment (he's listed in the "Yellow Pages") or write ANSUL CHEMICAL COMPANY, Marinette, Wisconsin.

ANSUL

Fire Equipment
Refrigeration Products
Industrial Chemicals

81

ORIGINAL

Within thirty seconds—three quick operations—and you're in action with John Bean High Pressure Fog Firefighters. Just engage the pump, open the valve, adjust the throttle for RPM and the hose lines are ready. This kind of speed for fast fire attack adds hard-hitting, fire-killing power to any department, metropolitan or rural. With John Bean Original High Pressure Fog apparatus, you can extinguish more than 95% of your fires faster, use 10% or less of the water usually required, and do it with greater safety, with little water damage.

HIGH PRESSURE FOG FIGHTS FIRES FASTER WITH A 3-WAY PUNCH . . .

1 IT COOLS—As it contacts a fire, John Bean High Pressure Fog instantaneously absorbs heat at the rate of approximately 280,000 BTU per gun, per minute, and reduces the temperature below the kindling point.

2 IT SMOTHERS—By reducing the oxygen supply. As the super fine fog particles absorb heat, they expand 1700 times to form a smothering blanket that displaces the combustion-supporting oxygen.

3 IT ISOLATES—By throwing a barrier of "cold steam" between the burning gases and their source of fuel.

FAMOUS John BEAN HIGH PRESSURE PUMP

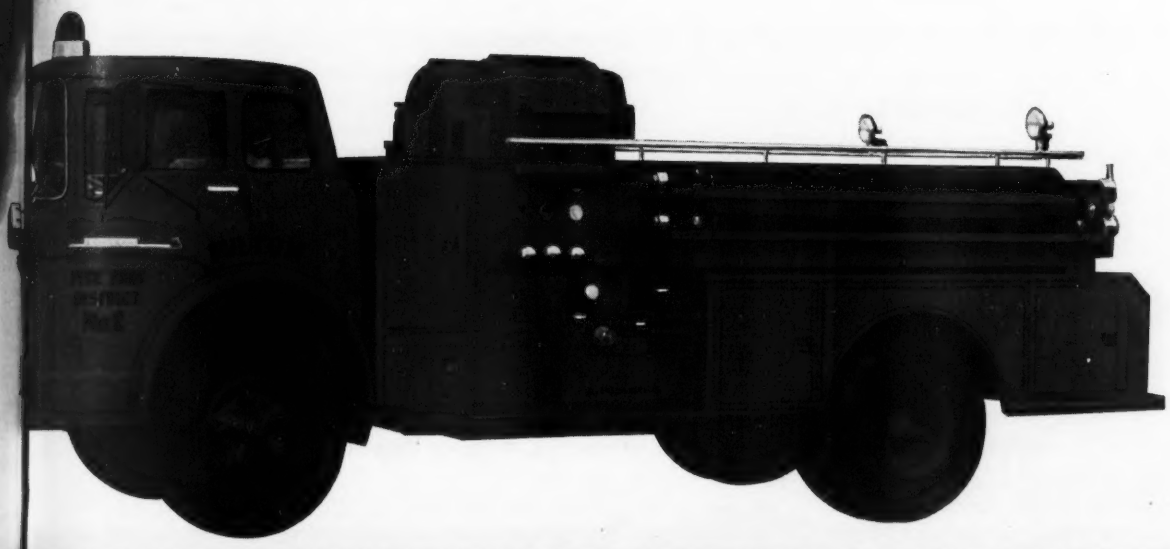
The original, true high pressure fog pump operates at 850 psi, delivers 60 gpm through two hose lines. Self-priming, it can be supplied from tank, hydrant or draft source. Rugged and dependable, the fully enclosed pump features oil bath lubrication, forged steel crankshaft and double-sealing plunger packings for maximum efficiency.

PATENTED FOG GUN

Easily operated by one man, this famous gun features instant, on-off trigger action with face-protecting spray for close approach. Rotating barrel permits quick selection of complete range of fog patterns from close-up spray to long range fog.

FOR PROOF OF John BEAN FIREFIGHTER EFFECTIVENESS, WRITE TODAY FOR A DEMONSTRATION

John BEAN HIGH PRESSURE FOG FIREFIGHTERS for hard-hitting, fire-killing power



ENCLOSED, HEATED REEL COMPARTMENTS

Removable enclosures winterize the two reel compartments. These, as well as pump, valves, gauges and controls are warmed by engine heat to assure dependability in freezing weather.

500-GALLON WATER TANK

Big, 500-gallon tank supplies water for high pressure fog lines. Water, discharged as high pressure fog, is increased by a 10 to 1 ratio, makes the 500 gallons go ten times further. Six-compartment baffling prevents undesirable water surge, assures smooth cornering.

LIGHTED CONTROL PANEL

All gauges, valves and controls are centralized for instant operation. Entire panel is illuminated for quick, easy reading at night.

POWER TAKE-OFF FOR IN-MOTION PUMPING

High pressure pump has its own power take-off coupled to the engine so that fog lines can be operated while truck is in motion for fighting grass, brush and forest fires. Pump control is located conveniently in the cab.

400-FT. HIGH PRESSURE HOSE

Standard equipment includes two, 200-ft. reels of special, 5000 psi hose, plus two 10-ft. lengths of 2½-inch hard suction hose, complete with suction strainer.

AMPLE STORAGE CAPACITY

Four, large-size, fully lighted compartments provide more than 45 cubic feet of storage space for accessory equipment. Flush-type door latches for easy opening.

THE **ORIGINAL** *HIGH PRESSURE FOG*

IN YOUR COMMUNITY

John BEAN®

DIVISION OF
FOOD MACHINERY AND CHEMICAL CORPORATION
LANSING, MICHIGAN — SAN JOSE, CALIFORNIA

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do your FOAM LIQUIDS measure up to these standards?

1. Is your foam liquid listed under the Underwriters' Laboratories' Reexamination Service? ☐ Yes ☐ No
2. Is every batch of foam liquid fire tested at the factory before it is shipped to you? ☐ Yes ☐ No
3. Does your foam liquid have a good record of stability over years of storage, and is it free from sediment that might foul the action of your equipment? ☐ Yes ☐ No
4. Is your foam liquid supplier able to make fast emergency shipments at any time of day or night? ☐ Yes ☐ No
5. Does your foam liquid supplier maintain active foam liquid research, development, and technical service programs? ☐ Yes ☐ No
6. If your foam liquid may be used below 10°F, is it a true "Cold Foam" liquid that will proportion properly at temperatures down to —20°F? ☐ Yes ☐ No

If you can answer YES to all six questions, you're already using National Aer-O-Foam Liquids. If not, you need them! For full information, write for Booklet B

first in fire fighting for over 50 years!

Waukesha has been building engines for fire equipment for over fifty years. Since one of its first internal combustion engines for fire fighting service was sold to the Chicago Fire Department in 1908, Waukesha has built into these fire engines quick acceleration, flexibility, immediate response to varying load demand, and the reserve of extra power needed for emergency overload.

Waukesha Fire Fighter Engines are in use throughout the United States, and in many foreign countries, in the finest fire equipment built by leading manufacturers.

WAUKESHA FIRE FIGHTER ENGINES ...up to 300 hp

477

Checking on performance of Waukesha Fire Fighter Engines.

repair hydrant traffic damage FAST

...without loss of water...without water shut-off...without digging

The Mueller AWWA Improved Fire Hydrant is quickly put back into action when knocked over.

Mueller's Safety Flange design prevents breakage of the hydrant barrel and bent or broken operating stem. Hydrant safety mechanism snaps off cleanly just above the ground line.

The compression-type main valve stays closed. No water is lost to affect pressure at neighboring hydrants. No damage is caused by flowing water. Lower stem section is held solidly in place to permit easy repair without digging.

The simple, inexpensive repair kit shown below contains all parts needed to completely restore hydrant to service in a matter of minutes.

Safety Flange Repair Kit

Consists of safety flange, safety stem coupling, safety flange gasket and can of Mueller hydrant lubricating oil.

Write for complete information and specifications.

MUELLER CO. since 1857 SERVING the Water and Gas Industries QUALITY

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MUELLER CO.

DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited; Sarnia, Ontario

Chicago chooses Hi-Ranger again

to fight fire . . . save life . . . protect property

In 1959, the Chicago Fire Department purchased Hi-Ranger "Snorkels" for what proved to be a major break-through in fire fighting tactics. Hi-Ranger "Snorkels" proved so successful in fire fighting and rescue operations that Chicago has chosen Hi-Ranger again. Your city too, can have this kind of protection. Hi-Ranger has more experience in the design of "Snorkel" towers than any other designer or manufacturer. Let this experience work for your city NOW. A Hi-Ranger "Snorkel" representative is little further away than your telephone. We welcome your call or your letter of inquiry.

FILL IN AND RETURN THIS COUPON FOR FULL DETAILS ON HI-RANGER "SNORKEL"

Name _____

Position _____

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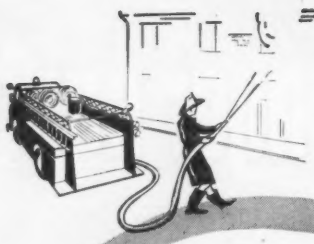
City, State _____

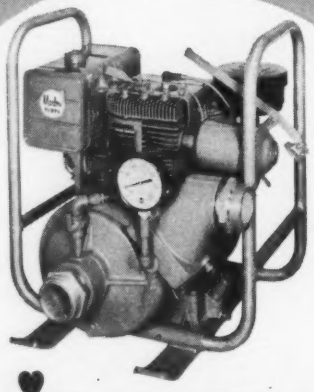
HI-RANGER "SNORKEL"

MOBILE AERIAL TOWERS, INC.

1730 NORTH HARRISON STREET, FORT WAYNE, INDIANA

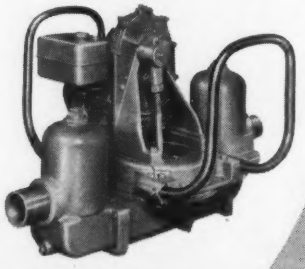


*The **HEART** of any Fire Fighting Service is in the **pump!***

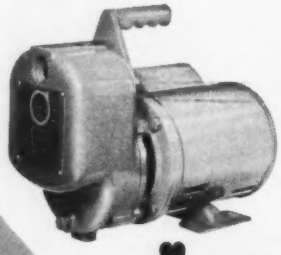


♥ This powerful, portable fire pump, Model 2½C15S, is lightweight and compact—easily placed in small compartments or spaces on any jeep or pickup. It provides over 100 pounds pressure for low pressure fog or foam operation. A dependable, four-cycle engine assures quick, easy starting, unattended operation for long periods.

♥ Versatile, fast-priming 1½" utility pump. All-aluminum construction makes the 1½AA1 Model light in weight and easy to carry—weighs only 49¾ lbs. It can be used for general wash down, pumping out flooded cellar areas, light duty booster service, and for filling auxiliary tanks and tank trucks.



♥ Model 302B "Mud-Hog" is a fast-priming diaphragm pump that weighs only 126 pounds. Fitted with 3" suction and discharge ports, this pump is designed to handle "pump outs" of debris, mud and silt resulting from floods.



♥ A portable, self-priming pump, the GEM is available in ¾", 1", and 1½" sizes with capacities up to 70 gallons per minute. It is suitable for cellar pumping and fills minimum fire protection requirements when used with garden hose.

MARLOW *makes 4 Fire Fighting Units*

Lightweight and easy to handle, Marlow pumps and generators provide dependable fire protection for municipalities, industrial plants and farms. Especially designed for the job, these units are indispensable to both large and small Fire Departments. This highly portable equipment can be placed in a car or jeep and quickly dispatched in an emergency or it can be carried into rough areas inaccessible to pumpers and trucks.

Write today for complete details on Marlow equipment for fire fighting service and for the name of your Marlow dealer.

9-270

Marlow PUMPS ®

MARLOW PUMPS

DIVISION OF BELL & GOSSETT COMPANY

MIDLAND PARK, NEW JERSEY

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DUO Safety

FIRE LADDERS

Now in FOUR GREAT SERIES

With DUO-SAFETY Exclusive Tongue and Groove Construction

No Hooks or Guides to Injure Hands! Jack-knifing!

Now, there's a Duo-Safety Ladder for every budget...for every use. The new Series 1200—an intermediate ladder—fills out the line to offer you a bigger choice of better ladders. Check the specifications below...you'll find the ladder for your requirements. Write for more information and prices.

Choose the Series to fit your needs!

SERIES 1000	For Pumper Use	24′ to 30′	2¾″ CHANNEL RAIL
SERIES 900	For Pumper and Service Trucks	24′ to 40′	3¼″ CHANNEL RAIL
SERIES 1200	For Service Trucks	35′ to 55′	3¾″ CHANNEL RAIL
SERIES 500	For Service Trucks	10′ to 60′	TUBULAR RAIL

Including the new

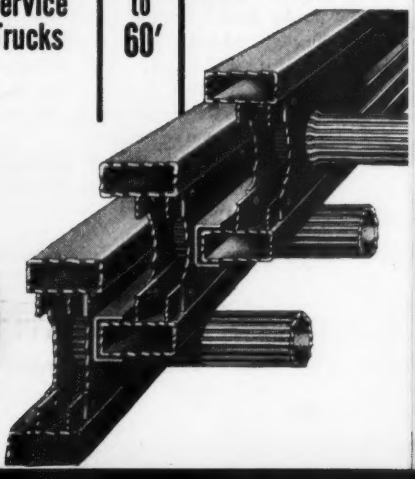
INTERMEDIATE SERIES 1200

The new 1200 Series at budget fitting prices in the famous Duo-Safety line is an intermediate ladder to take care of a range of sizes where requirements are not sufficiently severe to necessitate buying the Duo-Safety heavy duty 500 Series tubular rail.

Write for complete information and prices!

For Great Strength, Extraordinary Safety!

Adapted nationally by fire departments as standard ladder equipment, the 500-A Series represents perfection of ladder design. Light weight, greater strength and extraordinary safety are incorporated into the Tubular Rail Construction of this great ladder. Available in all standard ladder sizes 10′ to 60′.

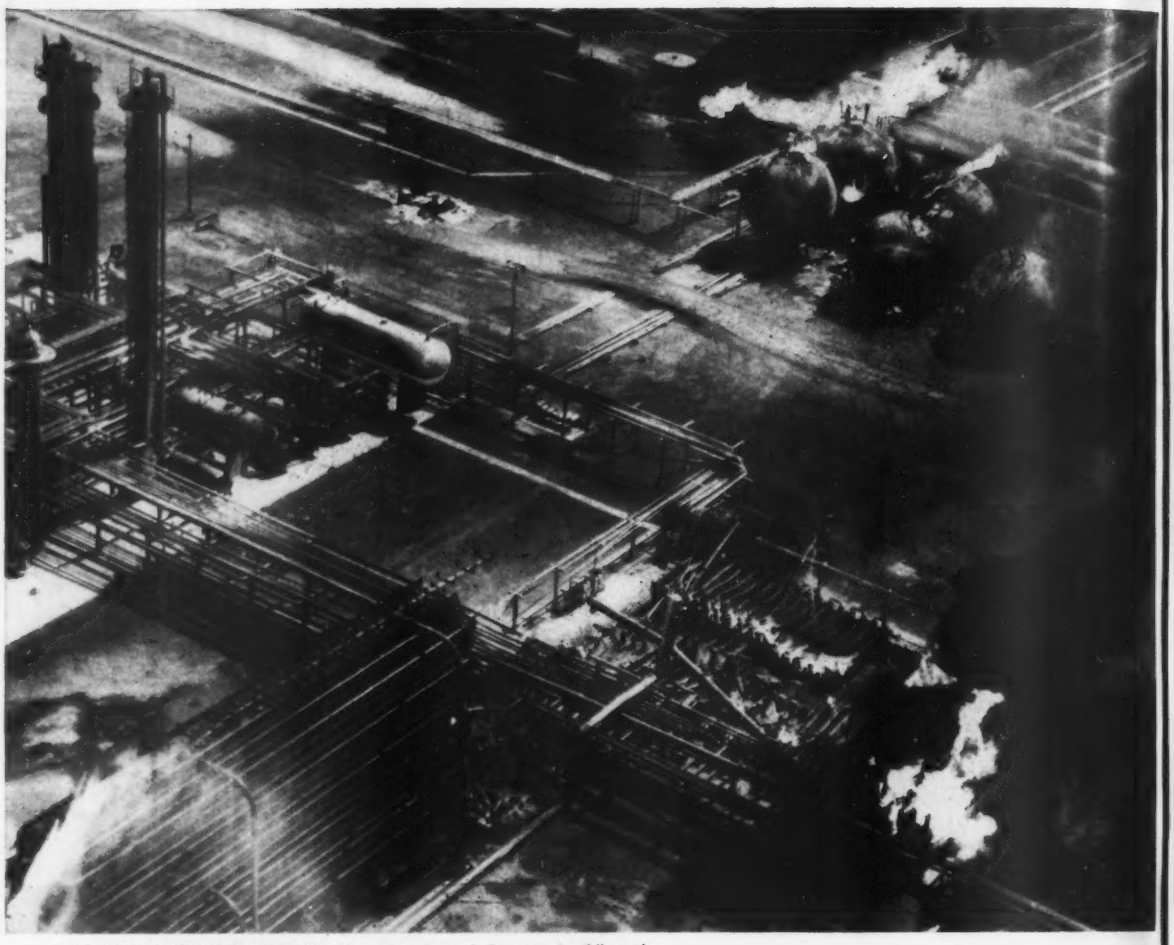


DUO Safety

DUO SAFETY LADDER CORP.

13 WEST NINTH AVENUE • OSHKOSH, WISCONSIN

In Canada: La France Fire Engine and Foamite, Ltd., Ontario



WITHOUT ADEQUATE PROTECTION, this spectacular tank fire spread wildly and caused many thousands of dollars of refinery property damage.

Keep tank fires from getting out of control with Grinnell Water Spray

Proper safeguards are uppermost in importance in protecting tanks which contain flammable gases and liquids in the event of fire. For example, tanks must be guarded against extreme heat exposure. Leaking gas, if it should develop, must be diluted to the point where it will not burn. And fire, if it should occur, must be localized and controlled or extinguished.

With a Grinnell Water Spray System, you get such protection.

Before heat raises tank temperatures dangerously, an enveloping spray of water provides instant cooling, reducing internal pressure which helps prevent rupture. In addition, air turbulence is created (even in still air) which, in conjunction with the water vapor from the spray, helps dilute the flammable vapors to control or extinguish the fire. Flammable products which cannot be safely extinguished can be safely burned off under the protecting water spray.

FREE REFERENCE MANUAL. For a comprehensive picture of all the most advanced methods of special hazard fire protection, request your free copy of "Special Hazard Fire Protection by Grinnell." Write Grinnell Company, Providence 1, R. I. Branches in principal cities.

GRINNELL WATER SPRAY SYSTEM under test at the Marietta, Ohio plant of the Bakelite Union Carbide Plastic Company, a division of the Union Carbide Corporation. Water — when it is applied in time and distributed over the surfaces efficiently by a properly engineered system — is most effective in limiting tank fires and controlling their spread.

GRINNELL

FIRE PROTECTION SYSTEMS SINCE 1870

FIRE APPARATUS COMPANY Dept. FE-1060, Anderson, Indiana, U.S.A.

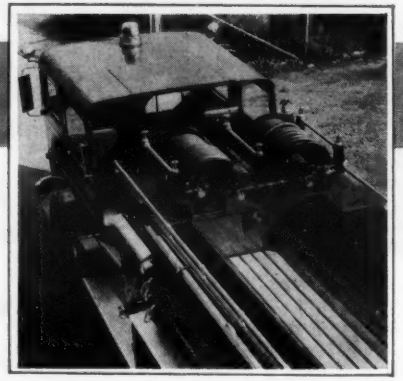
BASIC SPECIFICATIONS OF HOWE DEFENDER

ENGINE: Waukesha or Hall Scott Single or Dual Ignition to 300 HP.
STEERING: Ross standard — Vickers power steering optional.
TRANSMISSION: Fuller 5-speed standard — Spicer Syncromesh or Turbomatic automatic transmission optional.
AXLES: Timkin Model FD-900 front, Timkin Model QT-140 rear.
WHEELBASE: 160" standard; longer available for special applications.

FIRE EQUIPMENT

PUMP: Waterous 500 gpm to 1500 gpm famous Electromatic, with split case design for easy servicing.
BOOSTER TANK: Capacity optional. 10 gauge steel thru-out with highest percentage copper content available. Supplied with Howe's exclusive spill-proof type front tank filler.
HOSE BODY: Heavy gauge cold rolled stretcher leveled automotive body steel.
COMPARTMENTS: Customized to customer order.
WARNING SIGNALS AND LIGHTING: Siren optional; 2 hose body lights; 2 pistol grip spot lights; 4 headlights; 2 tail-lights, 2 underhood trouble lights, pump panel light.
EQUIPMENT: Ladders optional; 2 - 10 ft. lengths pump suction hose and fittings; axle; crowbar; pike pole; hose reel. Extinguisher, lanterns, hose, nozzles, etc. to customer order.
FINISH: F. D. red lacquer with genuine gold leaf lettering and striping. Special emblem to order.

Sold to Benton Harbor, Michigan, by E. L. Schultz and M. Mahoney



HOWE DEFENDERS . . . CUSTOM ENGINEERED

Howe Defenders are built to meet the customer's individual needs — let the Howe engineering staff recommend the pumper that will best serve **your** locality.

Howe Defenders are effectively serving throughout the country in such centers as Dallas, Houston, St. Louis, Birmingham, Ft. Lauderdale, Jamestown, N. Y., Muncie, Ind., Gastonia, N. C., and in many government installations.

Depend on Defender — custom-built by an experienced, old-line company.

The Benton Harbor, Michigan, unit shown above and at left features: the 5-man canopy-type cab having removable section in top of cab for easy access to engine; dual ignition system; Spicer automatic Model 183 "Turbomatic" transmission; Waterous CM-1000 Electromatic 1000 gpm two-stage pump; two electric rewind hose reels; 500 gallon booster tank; four large side compartments; two large rear compartments.

HOWE

"dependable fire apparatus since 1872"

FIRE APPARATUS COMPANY **Dept. FE-1060, Anderson, Indiana, U.S.A.**

HF HOWE

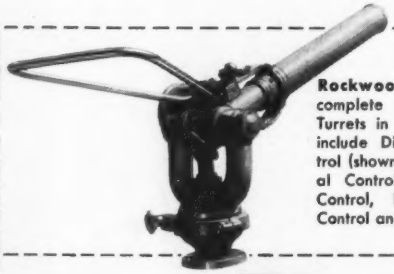
Stop Highway Fires!

The only way you can prevent highway fires from becoming major disasters in your community is to put them out as quickly as possible. Rockwood fire fighting products bring you that positive protection.

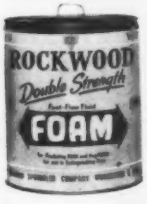
- **Using Rockwood nozzles or turrets, on fire trucks or on the ground, you can hit fires harder.**
- **Using Rockwood FOAM liquid, single or double strength, you can throw a quickly smothering blanket over fires in flammable fluids and other combustibles.**

Rockwood nozzles and turrets fight fires four ways: with solid water stream, solid FOAM stream, FogFOAM and WaterFOG. For over half a century, throughout the country, Rockwood's highly advanced fire fighting aids have been proving their ability to save lives and property. Make sure your own department has these dependable tools. For a large, illustrated booklet on this complete line, write to Rockwood Sprinkler Division, Portable Fire Protection Division, 444 Harlow Street, Worcester 5, Massachusetts.

SG-60 Nozzle with FF Extension. Like all Rockwood Nozzles and Turrets, this discharges straight water stream or WaterFOG, solid FOAM stream or FogFOAM.



Rockwood makes the most complete line of Specialty Turrets in the market. Types include Direct Manual Control (shown), Extended Manual Control, Remote Manual Control, Remote Hydraulic Control and Portable.



Rockwood Double Strength FOAM Liquid is mixed 3 parts with 97 parts water. This forms a blanket with proved ability to extinguish fires in flammable liquids with maximum speed and safety.

BLISS ROCKWOOD

ROCKWOOD SPRINKLER DIVISION

of The Gamewell Company
A Subsidiary of E. W. Bliss Company

Engineers Water . . . to cut fire losses

Distributors in all principal cities

Important Announcement

starting with the JANUARY 1961 issue of

FIRE ENGINEERING

the publication date will be advanced three weeks!

SUBSCRIBERS

will then receive their copies during the first week of each publication month. So many of them have asked us to make this change—we are sure it will meet with popular approval.

ADVERTISERS

the new publication date—the 1st of the month—will enable them to more closely tie their advertising schedules with convention and meeting dates.

CLOSING DATES FOR JANUARY AND SUBSEQUENT ISSUES

For Reservations:	December 5th	(5th of preceding month)
For Copy to Be Set:	December 5th	(5th of preceding month)
For Complete Plates:	December 10th	(10th of preceding month)

PLEASE CORRECT YOUR RECORDS ACCORDINGLY

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His community showed the way...

Chief Thomas F. Gorman of Quincy, Massachusetts, knows that this new home will have adequate fire protection facilities. His city recently became the first municipality to pass an ordinance requiring that all new residential and institutional construction have fire detection and alarm facilities within its confines.

Chief Gorman feels that this supplement to the city's Gamewell Type A Fire Alarm System now gives Quincy the most advanced fire prevention and protective facilities available. All residential and high value areas are adequately covered by strategically located curb boxes. In addition, Master Boxes tie all hospitals, public schools and a great many of the larger industrial buildings into the municipal system. In a matter of seconds after any box is pulled, Quincy's entire fire defenses, as well as police and waterworks, know its location.

Make certain that *your* community officials and safety authorities know about Quincy's positive steps toward reducing loss of life and property. Gamewell Company will be happy to supply copies of this ordinance for your use. And, if you desire, we'll conduct a fire survey to assist you in planning or expanding your alarm system. Write The Gamewell Company, 1244 Chestnut Street, Newton Upper Falls 64, Massachusetts. *A Subsidiary of E. W. Bliss Co.*

Recent New Installations of Gamewell Fire Alarm Systems

- Chester, Penna. .... Type "A"
- Las Vegas, Nev. .... Type "B"
- Alexandria, La. .... Type "B"
- San Jose, Calif. .... Type "A"

BLISS Gamewell®

FIRST...WHEN SECONDS COUNT

FIRE
ENGINEERING
VOL. 113, NO. 10 OCTOBER, 1960
THE JOURNAL OF THE FIRE PROTECTION PROFESSION SINCE 1877

Home Fire Alarm Systems — Not An Enigma

For a number of years the fire service has conducted formal programs designed to acquaint home owners with the hidden fire hazards of their residences and the ways and means of safeguarding the lives of their families. This has culminated in the now widespread home inspection program sponsored by the International Association of Fire Chiefs and, in addition, has brought about increasing emphasis on home fire drills. Yet at the same time the mention of home fire alarm systems to the average fire chief of this country immediately creates an atmosphere of uncertainty and sometimes outright hostility.

This seeming paradox has its roots deep in the philosophy of the fire fighting profession. It has been created over a period of years by observation of the selling tactics employed by some unscrupulous persons and compounded by bitter experience with inadequate or worthless devices. As a result it appears on the surface that the fire service itself is against home fire alarm systems. Nothing could be further from the truth.

Due to the nature of fire hazards all fire protection personnel are reluctant to leave any area of fire safety to chance. Through many generations of bitter experience it has been noted that fire catastrophies usually occur when so-called calculated risks are taken. Because of this, fire fighters feel that the weight of responsibility where human life is concerned is too great to lightly dismiss with anything but approved complete protection.

From time to time many home fire detection and alarm systems have appeared on the market with features desired by fire service officials, including recognized laboratory approval of components. At the same time the methods of selling these systems employed by some vendors have left much to be desired. In a few areas the complaints of high-pressure tactics have mounted to the point where grand jury investigations resulted. In practically every instance the fire chiefs concerned have not condemned the purpose or the equipment but rather the lack of responsibility on the part of the supplier or agent in the vital areas of servicing and maintenance.

The main conflict rages between accepted business ethics and the moral responsibility which fire protection personnel carry with them at all times. In the fire protection field it is not enough to produce soundly engineered products but in addition, they must be rigidly maintained to provide constant dependable service. Nothing less will suffice, for fire chiefs have learned that when dealing with the human factor anything less can be fatal.

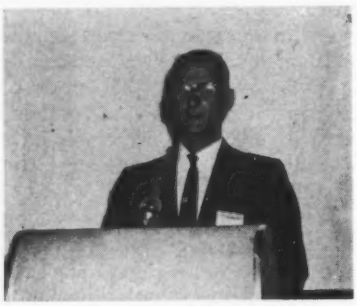
Every businessman concerned with alarm systems recognizes that the greatest potential market for such products lies with the homeowner. Here is concentrated the bulk of the 180 million people of the nation and here lies a tremendous profit potential. The only stumbling block to date has been the lack of support by the local fire chief. It is doubtful if any business organization will ever "crack" this market until such support can be obtained, for regardless of the feelings sharp salesmen may harbor concerning fire officials, the local fire chief is still the main buying influence in any community where fire protection is concerned.

Fire chiefs are not arrayed "against" home fire alarms but are solidly "for" sound products, scrupulous salesmanship and vigorous maintenance. The business concern which comes up with a responsible program which meets this criteria within the financial means of the average homeowner will quickly receive the merited support of fire fighters in general. In addition, it will have earned the respect of fire chiefs.

In the interest of furthering the protection of the lives of all citizens it is evident that organizations devoted to this area of business should endeavor to correct any differences that now create strained relations with the fire service. Working with, and through the International Association of Fire Chiefs, it should be possible to overcome the present objections in the field. Such cooperative effort must certainly result in increased fire safety to the people of this nation.

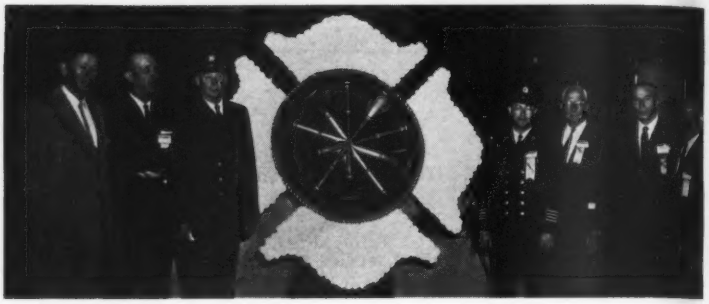
Hlow O'Brien

IAFC Executive Director B. Richter Townsend gives his annual report at opening business session



Second Vice President-Elect Chief Lewis A. Marshall, Providence, R. I., thanks members for honor paid to him

Dignitaries on stage during impressive memorial service. Left to right are: Chief G. A. Mitchell, IAFC treasurer; Chief A. H. Lintelman, IAFC retiring president; Host George L. Holzschuh; Chief Ralph G. Rogers, Spencerport, N. Y.; Jay W. Stevens, IAFC director of fire prevention; General Osvaldo Piermarini, head of Italy's fire service and Chief William J. Taylor, IAFC president-elect



All records broken by

THE LEADERS of the fire service in the United States and Canada, England, Italy, Japan, Central and South America and the Philippines, more than 1,100 members of the International Association of Fire Chiefs, met at Rochester, N. Y., from September 12 to 15. They listened to experts in various phases of fire prevention and protection, discussed the major problems facing the service, adopted resolutions embodying the IAFC's policy in relation to these problems, and viewed demonstrations of the latest apparatus and techniques for fighting fire.

In the number of persons registered (2,299) and in the number of exhibitors who rented space in the exhibition hall (108), this was the biggest conference in IAFC history.

In his keynote address at the opening session, President Arthur H. Lintelman, chief of Baytown, Texas, urged the chiefs to build greater public understanding of the fire service. He noted that more than $2 billion are spent annually on fire prevention and protection, and that most of our big cities have budgets well in the millions. The fire chiefs of those cities, called upon to administer huge sums, must not only have the administrative and management skills of big business, but must also be representative of outstandingly courageous leadership and experience. While the fire chiefs recognize that the fire service is a big business, and a hazardous business, too, does the public realize this, Chief Lintelman asked.

Installation of officers at close of conference. Left to right: Retiring President A. H. Lintelman; Second Vice President L. A. Marshall; First Vice President Edward F. Deignan, Elizabeth, N. J.; President William J. Taylor

Pumpers and ladder trucks were prominent in the aisles between the record 108 exhibitors at the greatest display of fire fighting apparatus and equipment ever held in the world

All photos not otherwise credited are by Lt. D. W. Pifer, Rochester Training Academy

Chief William J. Taylor, Burbank, Calif., newly elected president, and I. Herbert Case, director of planning, IAFC, examine 1916 Model "T" chemical engine of the Wyoming, N. Y., Fire Department which was on display at exhibits *—Ford Motor Co. photo*

Rochester IAFC Conference

Promoting greater understanding

The IAFC president cited the International Fire Administration Institute as the outstanding means for advancing the prestige of the fire service and for helping to solve today's vexing problems of management. He also noted that this year for the first time the IAFC made a formal attempt to bring about better public understanding of the fire service through its public relations program. Chief Lintelman also described as a secondary benefit of the home inspection program, the increased community realization of the contribution which the fire service makes in the areas of fire prevention.

Chief Lintelman emphasized the need for greater public understanding of two major problems. He said that the fact that fire fighting is the most dangerous of all the professions deserves greater public attention. He observed that the on-job injury rate of fire fighters is seven times that of the average American worker, and the death rate from accidents is three times greater. As the second major problem deserving greater public recognition, he pointed to the responsibility of the fire chiefs in the event of enemy attack or national disaster.

The rest of the opening session was devoted to the introduction of city and county officials, including the host chief, Chief George L. Holzschuh. The traditional memorial service concluded the Monday morning session. The Rochester Gas and Electric chorus provided the musical background for the service and elicited considerable favorable comment.

The first afternoon session was devoted principally to committee reports and to a description of the Rochester-Monroe County Mutual Aid Plan and the new Rochester-Monroe County Communications Installation, both of which were covered in detail in the August issue of FIRE ENGINEERING.

On Monday evening, the Barnard Fire Department acted as hosts at a "Get Acquainted Party" for those attending the Conference. The Barnard fire fighters and the ladies auxiliary served a buffet barbecue supper, and the department's talented 40-piece band and drum corps entertained.

The highlights of the Tuesday morning session were the report of the Committee on Arson, presented by its chairman, William D. Rossiter, chief, State Fire Marshal Division, Madison, Wis., and an address by Martin Scott, chief fire marshal and executive assistant, Office of the Fire Commissioner, New York Fire Department.

Juvenile incendiarism

Chief Rossiter reported that the Arson Committee feels that one of the most serious problems that should cause the fire service its greatest concern is the high incidence of fires set by juveniles. He estimated that 50 per cent of all "set fires" are set by children. He described this juvenile incendiarism as "the most serious and perplexing single problem confronting the fire service as far as incendiarism is concerned."

The chiefs were urged to help in establishing clinics and guidance centers for the treatment of mentally and emotionally disturbed children in their communities. Where such clinics exist, they were urged to facilitate the prompt admission and treatment of juvenile fire setters.

However, the committee recommended that an effort be made by the fire service to separate the juvenile who sets fires accidentally, through curiosity or incidental to play, from those juveniles who set fires because of mental or emotional disturbances, through vandalism or to cover the evidence of another crime such as burglary or theft.

In the case of the former, most of them are children of tender years, and a warning and parental discipline will usually suffice to control the problem and prevent a recurrence.

It is the second group, the deliberate fire setters, that gives rise to the greatest concern for the fire service. If left unchecked and untreated, the juvenile fire setter will surely develop into the adult firebug, Chief Rossiter said.

Fraudulent dwelling fires

Chief Rossiter also reported that it was noted, from reports to the com-

Tommy Daum, 13-year-old son of Volunteer Fireman and Mrs. Gene Daum of Albion, N. Y., presents Special Merit Award by Muscular Dystrophy Association of America to President-Elect Chief William J. Taylor in recognition of IAFC support of Muscular Dystrophy drive efforts during 1959 campaign

mittee, that the fraud fire, once associated with small business and commercial establishments, is now involving rural buildings and urban dwellings with alarming frequency. In those states and provinces having the so-called "valued policy" law, the problem is even more serious since in the event of the total loss to a building by fire, the amount of fire insurance carried is automatically the value of the building.

The apparent increase in fraudulent dwelling fires is attributed, at least in part, to low down payments with resultant heavy mortgages and high interest rates which have resulted in fraud fires when foreclosure is threatened. In the case of a home purchased on a land contract, a buyer, unable to keep up his payments, may resort to a fraud fire to protect his equity. In some cases, owners have been unable to make payments on their home loans because of temporary unemployment. Some non-fraud arson involving dwellings have been the result of interracial tensions.

Because of these and similar conditions, the committee urged the fire service to give special attention to dwelling fires and to make a thorough and vigorous investigation of the fire cause when the origin is not immediately apparent.

The detection and investigation of arson requires closer cooperation with law enforcement agencies than in the case of any other type of crime. From reports to the committee, it is apparent that this cooperation ranges from superb to very poor. In those areas having a full-time arson squad or fire investigation bureau, cooperation in most cases is no problem. But comparatively few communities can afford or have the need for a unit whose work is limited exclusively to the investigation of suspicious fires.

Understanding needed

The committee expressed the opinion that in those places where cooperation between the fire service and law enforcement is poor, it is due to a lack of understanding of the problems of the other service rather than from an unwillingness to cooperate. The fire service may regard arson strictly as a crime, therefore a law enforcement problem. The law enforcement agency may regard arson as another type of fire, therefore a fire service problem. The truth lies somewhere between these viewpoints.

The committee recommended that where such problems exist, the fire chief sit down with the head of the law enforcement unit in his community and come to a definite understanding as to the duties, powers, responsibilities and limitations of each service in the detection and investigation of arson.

The committee also recommended that a detailed report on every incendiary fire and every suspected or supposed incendiary fire be given to the law enforcement agency by the fire chief even if no immediate action is taken to investigate the fire.

The committee again recommended, as it has in the past, the attendance of fire department personnel at arson seminars and schools which are attended by all branches of the public safety services; that on local levels, representatives of law enforcement be invited to attend and lecture at fire schools when the subject of arson is to be considered. By the same token, fire department personnel should have the opportunity to participate in police schools when the investigation of arson is taken up.

Chief Fire Marshal Martin Scott of New York City pointed out the tie-in between fire investigation and fire prevention. He reported that 25,000 fires were investigated in New York City in 1959. A minimum of four persons were interviewed in the investigation of each fire so that at least 100,000 persons were deeply impressed with the lessons of fire prevention during these interviews by the fire marshals. He noted that the reduction in arson in some areas was due, at least in part, to the number of excellent arson investigation seminars and courses now available throughout the country. He urged the chiefs to investigate more fires.

Moonlighting

Henry J. McFarland, chairman of the Committee on Civil Service Classifications, reported that the committee had surveyed the fire service to determine what effect, if any, the problem of "moonlighting" had on the fire service in general. The questionnaire was returned by more than 1,000 fire chiefs.

In the great majority of fire departments in the United States and Canada, "moonlighting" apparently is permitted. A good many departments have adopted rules and regulations covering it. In some cases, a permit is required, while the regulation prohibits the holding of a second job, but does allow occasional spare time work.

It is not unusual to find the regulations restricting or limiting "moonlighting" to the area protected by the fire service, providing that the personnel office is advised of the location of the work.

Generally speaking, restrictions are present where the dual employment is with organizations controlled by state or local regulations, such as the driving of taxis and the serving of liquor in a public bar.

The questionnaire provides some interesting conclusions as to the effect on the employment of those men engaged in a second occupation. While some chiefs expressed the opinion that

New gas turbine-powered pumper for San Francisco Fire Department stole the show at Rochester training grounds. Photographing unit in operation was difficult due to crowd surrounding it *—American LaFrance photo*

New hydraulic aerial platform for Memphis, Tenn., Fire Department demonstrating its capabilities during Wednesday afternoon program at Rochester training academy

they encouraged outside employment because it improved the physical and mental condition of the employee, the great majority seemed to feel that a second job created more problems than it resolved.

It was not unusual to note that fatigue was present in the group of employees which undertook a secondary job. The comment was prevalent that the attitude was developing into a right to use their position in the fire service as a place to rest up from their other work.

Mr. McFarland disclosed that, contrary to opinion previously held, salary was not the major factor in this problem. "The attitude seemed to be that as long as men have free time from their regular jobs, they will seek gainful employment elsewhere. The ever-present problem of man's unlimited wants and desires is conducive to his compulsion to earn more money to buy the things he wants or feels he cannot do without," Mr. McFarland said.

The questionnaire seemed to prove that all fire chiefs were confronted with this problem, and where it was not tolerated, employment conditions were no better than where no regulations were written on the subject.

Higher salaries urged

Fire Chief Edward F. Deignan of Elizabeth, N. J., stated, however, that low firemen's salaries are the only reason for dual employment. Chief Deignan, who is chairman of the Committee on Salaries, said the committee had recommended scaling firemen's salaries to the hourly wage levels prevailing in the construction industry. He said the average fireman's wage is less than $2 an hour, while construction pay ranges from $2.50 to $4.50 an hour.

However, Chief Deignan said some allowance should be made for the economic situation of the area.

Jerome M. Kornfeld, chairman of the law committee of the New York State Fire District Officers Association, spoke on the need to change fire district planning. Within New York State, he declared, the fire districts are faced with the serious threat of extinction. "If the trend toward annexation continues," he said, "this threat will exist not only for the fire districts, but for the townships as well." He pointed out that a village adjoining a fire district may decide to expand its boundaries. The fire district is a likely place for this expansion, and the commissioners find one morning that a goodly portion of their fire district has been annexed to a village. While there is a trend today in most of the states to control municipal boundary adjustments by statute, the problem has not been completely solved. Certain objective statutory standards for the annexation of territory are being established. These give the existing municipalities and special districts a certain amount of protection from the encroachment of unneeded and unwarranted new incorporations and annexations. Even if the annexation is to the best interest of the city or village, and is approved by a majority of voters in the territory to be annexed, there is still another important factor. Will the annexation affect, in a detrimental manner, the area from which it comes, namely the special district, should there be one in existence? This is just as important as whether the village that will acquire the area be benefited.

Fire research

Commander Henry S. Morton, United States Navy, spoke on Tuesday afternoon. In his subject "How Does Fire Originate?", he pointed out that the major research effort in the field of ignition and combustion has been directed towards the "demand for power." The nation's defensive war machine is based upon the unwritten philosophy that we must provide more power in more diversified forms than those of any enemy. Here again, history shows that the nation most advanced in producing "fire" is not the loser in a major conflict. However, the control of the ignition-combustion process in all categories of fire and explosion must be emphasized, rather than the present trend toward the production of yet more power.

Commander Morton said that a basic premise in considering the dangers of explosions with hazardous fluids, pneumatic and machinery systems has been that adequate prevention would result from reliance on the "old rule of thumb" method, i.e., the system's operating temperature should be maintained below the flash point of the fuel. However, with modern improvements incorporated in machinery, not only the chemical characteristics of the fuel must be considered, but the energy components, as well, must be analyzed in evaluating the hazardous possibilities.

"It is evident," the Commander said, "that the time has come to put an emphasis into improving the preventive systems. All of the highly powerful machines that are being produced hand over fist during this jet age will become but terrible hazards unless man learns to control what he has conceived."

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Standing room only was a common description of each day's business meetings which were held on auditorium stage of War Memorial

Helicopters may find wide use in fighting stru

HELICOPTERS have a bright future in the structural fire protection field, predicts one of the world's leading authorities on use of the "whirlybirds" in fire fighting. This wholehearted, enthusiastic forecast for fire fighting helicopters was made recently by Chief Keith E. Klinger of the Los Angeles County Fire Department.

Klinger speaks with experience and authority, since his department has been working with helicopters for five years and Los Angeles County was the first regular fire departments to have its own helicopter in service. The department not only has its own "chopper," but, in conjunction with the Los Angeles County Sheriff's Department, has access to two additional aircraft.

"The helicopter may well prove to be one of the most valuable tools the fire service has acquired in recent years," Klinger declared. "Our department has made numerous tests with the aircraft as far as adapting them to structural fire fighting tactics, but there are countless other uses which only time and careful testing will finally prove out." He advocates a full research program to determine the many possible uses of helicopters on structural fires and suggests establishment of a national fire research institute to begin the work.

Already proved fully to the chief's satisfaction is the use of helicopters to provide reconnaissance and communications on fires. "I have observed several large fires from the air. It is much easier to spot trouble spots as they develop and to move equipment in without delay." One major fire which aerial reconnaissance proved valuable was the Hancock refinery in Signal Hill during 1958 and there have been several other major blazes at which Los Angeles County chief officers have used the helicopter for observation purposes.

The County fire department is currently conducting tests using helicopter water drops in an attempt to control roof fires on structures in brush fire areas. At this writing, the results are not conclusive, but the tests have been satisfactory so far.

Helicopters have proved their value in fighting forest and brush fires in several years of active service in the west. Perhaps even more spectacular performances can be expected from the whirlybirds by fire fighters in the future.

For example, the California Division of Forestry and the Third Marine Air Wing, El Toro, Calif., recently cooperated in a joint operation to demonstrate the value of the larger aircraft carrying quantities of water to combat a brush fire. The Marines provided nine Sikorsky HUS helicopters for the tests held in Orange County. Special neoprene-treated canvas bags holding 150 gallons of water were used in the highly successful operation.

Chief Klinger also believes that helicopters can be extremely useful in laying hose lines in areas of limited accessibility or rough terrain.

"Our brush operations have already proved it feasible to lay hose lines from a helicopter. In the future, with bigger aircraft, it may be possible to lay longer and larger lines on structural fires," he said. "With the development of lightweight pumps, it may be possible to bring such equipment by helicopter into areas in which conventional apparatus cannot move because of rubble or other obstructions caused by a major disaster."

The helicopter has many other

Fire Department helicopter dumps 35 gallons of water on rooftop in test of helicopter to snuff out spot fires on rooftops in areas near brush blazes. Location is Calabasas adjacent to old Warner Brothers movie ranch in Santa Monica Mountains *—L. A. County F. D. photo by R. Bird*

structural fires

By CLIFF DEKTAR

proven uses for rescue and has been employed in numerous cases to take injured fire fighters directly to hospitals, avoiding long torturous rides by ambulance over rough or congested roads. Klinger also feels the helicopter will become an integral part of airport fire crash and rescue operations.

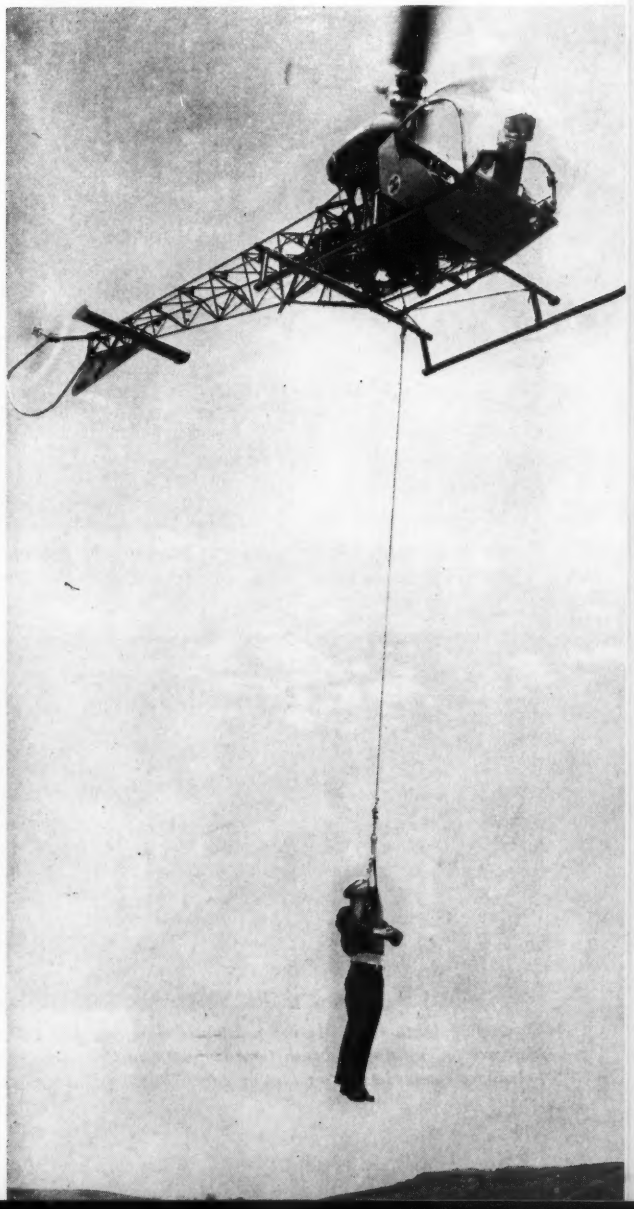
"When we participated in 'Operation Firestop,' keyed to brush and forest protection, in 1954," the chief recalled, "many of those present at the joint operation felt the helicopter could be well used around an airport to bring personnel to the scene of a crash or even to lay hose lines over rough,

L. A. County Fire Department helicopter pilot Roland Barton (L) goes over helicopter tactics with County Fire Chief Keith E. Klinger

L. A. County F. D. photo

View of water pattern on roof of house doused by helicopter attack. Aim is to provide sufficient coolant to delay fire long enough for fire apparatus to arrive and protect property

L. A. County F. D. photo by R. Bird



Helicopter lifts fireman with special sling in demonstration of value for rescue purposes. Chief Klinger believes that personnel can be brought in and taken out of spots with limited accessibility using 'copters

Helicopter carries telephone pole aiding men rebuilding burned out communications line in rugged Southern California mountain area. L. A. County Fire Department frequently calls on aircraft for such work in inaccessible terrain, saving many backbreaking hours for workers
L. A. County F. D. photo by J. A. Homuller

Closeup of sling used to raise or lower personnel by helicopter
L. A. County F. D. photo

Closeup of large HUS Marine helicopter dumping 150 gallons of water on fire during brush tests in Southern California. This helicopter carries largest amount of water—*U. S. Marine Corps photo*

Helicopter with special helipump designed for use on small brush fires. Chief Klinger feels further development might convert this pump to structural uses—*L. A. County F. D. photo*

muddy or otherwise difficult (for conventional vehicles) terrain."

The military services have been conducting various tests with large helicopters with a possible thought of using them in standard crash and rescue operations. Recent tests were held at Edwards Air Force Base, using the dual-rotor Kaman helicopter in bringing a small amount of foam or other extinguishing chemicals to the off-airport scene of a crash.

Los Angeles County communication crews have employed the helicopter to bring in telephone poles in extremely rugged mountain terrain to replace lines burned out by fire. "In an emergency," Klinger said, "a helicopter could easily lay telephone wires overland without difficulty."

Although enthusiastic about the future use of helicopters, the chief is careful to point out that there must be considerable research done, not only tactically, but for the safety of the fire fighters and the pilot.

"The pilot and his training are key factors in the success of any fire service helicopter program. We are fortunate in having Captain Sewell Griggers, of the Sheriff's Aero Detail, in charge of the helicopter pilots. He has assigned the very capable Roland Barton as our pilot. Captain Griggers' brother, Lyndell, is also assigned to fire duty when necessary. I think we have the best-trained fire fighting helicopter team in the nation. Barton has made many fine constructive com-

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Engines Nos. 6 and 7, Syracuse, N. Y., Fire Department, following collision at intersection in July 1959. Lieutenant of Engine 7 and driver of Engine 6 were thrown from apparatus and killed

Syracuse Herald Journal photo by Frank Monell

Stay on the Rig

Part I

By LESTER L. WILLIAMS, M. D.

Colorado Springs, Colo., F. D.

The following article was first given as an address at the Fire Department Instructors Conference, Memphis, Tenn., March 1960. Due to its importance only a few portions have been condensed and its great length requires it be presented in two parts. The concluding installment will be carried in the next issue of FIRE ENGINEERING.
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FIRE, uncontrolled and unfriendly, is one emergency that demands immediate attention, for it gets worse by the minute. Since fire will spread and increase in intensity until stopped, the adage has arisen that the first five minutes at a fire are of more value than the next five hours. Stated in another manner, it is essential that when a fire is reported, the responsible fire department should arrive on the scene quickly. This leads to standing orders to the effect that fire service chauffeurs will drive their vehicles to the scene of the emergency with the least possible delay.

If it is to fulfill its mission, the fire service cannot make a slow response to emergency calls. Since a response carries at least the normal risk of driving through traffic, fire fighters must realize that not the least hazard of their profession is the risk of a traffic accident en route to the fire.

During the 88-year history of the writer's fire department, three firemen have been killed in the line of duty, and two of those died due to traffic accidents. The first occurred in 1918 following an alarm for a fire in the city hall. Companies 1 and 4 responded. On the way to the fire, Company 4 tangled with some street car tracks. The plugman was thrown off the rear step and killed by the truck as it rolled over. The second fatality occurred on July 4, 1922, when the aerial turned a corner, and the rear end skidded into the curb. The truck was not damaged, but the tillerman was catapulted from his seat, landed on his head on the pavement, and died instantly from a broken neck.

Can accidents to fire apparatus be reduced in frequency? For many years a program has been conducted to educate the motorist on the need for safety. Because we have almost 40,000 fatalities on the highway every year we must conclude that safety campaigns will not eliminate accidents. They may reduce the number, but some drivers never learn and occasionally equipment will fail.

Motorists' cooperation needed

A safety program might be expanded to emphasize more vigorously to motorists the importance of yielding the right of way when they hear or see the warning signals of emergency vehicles. Some drivers just don't know that on hearing a siren they should pull to the right and stop. Again, such a program will never be 100 per cent successful, for some drivers will ignore these signals, others will not hear or see them because of lack of attention, the interference of conversation, the noise of the car radio, or defective hearing or vision.

Another lead which might be pursued is that of electronic control of

Chief Lester R. Schick of the Davenport, Iowa, Fire Department was involved in a wreck while responding to a fire call. Seat belt saved him from serious injury or death

Lakewood-Montair Fire Department has installed seat belts on its apparatus. The belt is ready for driver to fasten before leaving station—*Photo by Lester L. Williams, M.D.*

traffic signals, giving fire apparatus a cleared lane ahead. In one such system, a radio with highly directional antenna, is used to project a signal ¼ mile in front of the emergency vehicle. When this signal strikes the antenna of a traffic light it actuates the controller either to set all lights red, or only those on intersecting streets red, depending on local conditions and the desires of the fire chief and the local traffic engineer. The narrow beam of the projected signal prevents it from actuating traffic lights on adjacent parallel streets. To prevent two rigs approaching the same intersection from colliding, since each might assume it had the right of way, a special light is used, facing each traffic lane. When the radio signal is received by the traffic controller, this light is actuated and notifies the driver that the traffic light is under the control of his radio signal; therefore he has the right of way. An emergency vehicle in the intersecting street is notified by the same light that its radio signal does not have control of the traffic light, therefore it must yield the right of way at that intersection. This system offers tremendous possibilities in improved speed of response with increased safety. However, it may be out of reach of many departments for the immediate future, due to its cost and budget limitations.

This leads us into another avenue of thought. If accidents cannot be prevented, what can be done to reduce injury? It would be ideal if there were no accidents. Because man has not and is not likely to achieve perfection in judgment and decision, accidents will continue to occur, and all too often. Even if we accept accidents as inevitable, perhaps injuries could be prevented or reduced in frequency in some manner.

To understand the physics of injury in collisions, let us refer to a classical explanation by William Harper, consulting legal physicist, Pasadena, Calif. In a paper which appeared in 1952, he states: "Let us assume that a vehicle collides with a solid fixed object at a speed of 30 miles per hour. Let us assume further that the car is crushed in a distance of 2 feet. This means the velocity of the vehicle has decelerated from 30 miles per hour down to zero in a distance of 2 feet. This represents a deceleration rate of 483 feet per second. Such a deceleration is 15 times the acceleration of gravity, which is 32 feet per second. This unit of gravity is called the g. For convenience, we say that the vehicle suffered a 15 g crash.

What happens to the occupant?

"But how does the vehicle occupant behave in such a crash? At the moment of impact he has the same velocity as the vehicle. As the vehicle crashes to a full stop he continues forward at almost the same speed of 30 mph and collides with the dash and windshield. By the time his body reaches these objects they are at rest or very nearly so. Assuming that the combined crushing of his body and vehicle interior will reduce his velocity to zero in a distance of 2 inches, he will have suffered a deceleration of almost 5,760 feet per second or 176 g. (A 176 g crash exerts about 15 tons of force on the body of a 170-pound man).

"Although the occupant might have survived without injury the 15 g crash of his vehicle, he cannot escape injury or death from the 176 g crash of his body against the interior of the vehicle.

"Thus, while the direct injury-producing factor is always high deceleration rates, the velocity difference previously mentioned is the first phase of the injury process.

"The physics of injury tells us something which seems paradoxical; if the occupant wore the car as he would a suit of armor, the crushing of the car exterior in a collision would absorb tremendous amounts of impact energy and protect him from bodily injury. The occupant would be spared injury unless his passenger space became extensively crushed. But for some unexplained reason, the teachings of physics have never been understood or accepted by the motorist —so rather than 'strap on' the vehicle and take advantage of its protective armor in a crash, the motorist watches the vehicle crash relatively slowly to a stop and then dashes himself violently to pieces against its interior! This makes no sense at all but it is still standard practice after 50 years of automotive accident history."

Specifically, what causes an injury when a moving vehicle is involved in a crash? We have no statistics on such injuries in the fire service, but a large body of such statistics is available from carefully controlled and documented studies of accidents involving the motor car.

On March 3, 1957, while responding to a fire alarm, Engine No. 1 of the Denver Fire Department was involved in a wreck. Although the pumper was not overturned, the plugman was thrown off and suffered a broken thigh

The Department of Public Health and Preventative Medicine of Cornell University Medical College, under the leadership of Director John O. Moore, instituted a program in automotive crash injury research. As a result of exhaustive study of over 3,000 automobiles involved in injury-producing accidents, it was found the occupants were injured by striking a part of the car or being thrown out and striking something harder yet, and these factors are listed in order of importance: Steering assembly, ejection, instrument panel, windshield, top portion of back rest of front seat, door structures, lower portion of back rest of front seat, front corner post, flying glass, top structures, and rear view mirror. Remember, these items cause injury in a crash because the passenger is thrown against them.

Risk can be lessened

As Mr. Harper explained, if the passenger could be kept in his seat during a crash, the risk of injury should be lessened. Of course, if the passenger compartment of the car is crushed or collapsed, nothing can prevent injury, but this rarely happens.

To prove this theory, the program at Cornell accumulated a series of paired accidents, with all factors in each pair of crashes as nearly as possible alike, the only difference being that in one of each pair the car was equipped with seat belts, which were in use at the time of the crash. Some startling conclusions were reached. In this Cornell study, users of seat belts had 60 per cent less risk of sustaining injury than non-users of belts. Often it has been said that in an accident the safest course is to be thrown clear. Like many fables from the past, this is not supported by facts. If you could count on being thrown out on something soft, and not being hit by your own car or someone else's, you might fare well, but most ejectees aren't that lucky. In this series it was clearly demonstrated that users of belts had 85 per cent less chance of sustaining dangerous or fatal injuries than non-users of belts who were thrown out of the crashed automobile.

Seat belts aren't new in the fire service. In the days of horse-drawn apparatus, it was customary for the driver of the three-horse hitch, which pulled a steamer, to secure himself with a leather seat belt. The application of the belt is still valid today. In what way does use of a seat belt lessen the chance for injury. Since ejection from the car is next to the top in importance as a cause of injury, and since seat belts almost always prevent ejection, one frequent cause of injury is eliminated by their use. Following the reasoning of Mr. Harper, if the passenger can be restrained in his seat, then he undergoes the relatively slow deceleration of the mid-portion of the car instead of the violent deceleration when the passenger is thrown forward and stops against the more or less stationary front of the car, thus reducing the chance of injury.

Not even the most ardent advocate of the seat belt can claim they prevent all injuries. In a rare case, injury has been attributed directly to the wearing of a belt. Some critics claim that wearing a belt would prevent escape from a crashed vehicle in the event of fire or submersion, and this might occur. However, accidents of this type are rare, comprising less than one-half of one per cent of all crashes. Further, wearing a belt is more likely to prevent serious injury to the occupant so he will be able to escape under his own power in the event of a post-crash fire or submersion.

Recently a crash occurred in Colorado, and the news account indicated that in this crash one man burned to death because his seat belt made escape impossible. Interested in this subject, the writer visited the office of the state patrol to determine the facts. The news story could scarcely have deviated further from the truth. The car in which the man was burned to death was not equipped with belts. The other car did have belts. The woman riding in the right side of the front seat of that car did not have her belt fastened, and she died in the crash. The driver of that car had his belt fastened, and he was injured but survived. Thus out of the three people involved in this accident, the only one to survive was restrained in place with a seat belt. One conclusion to be drawn here is that whenever you hear a story of the way some motorist was injured or killed because of his belt, check that story carefully, for it doesn't fit the facts.

The statistics are conclusive

In dealing with injury reduction we must deal with statistics, and they show conclusively that when involved in an accident, wearing a seat belt markedly lessens the chance of serious injury or death. The two cases of death from traffic accidents that have struck the Colorado Springs Fire Department are too small a sample to be of statistical significance; however there can be no doubt but that had the tillerman on the aerial truck been strapped in his seat, he would not have died. Who knows what effect a belt would have had on preventing the other traffic fatality, the plugman thrown off the rear step, then rolled on by the hose wagon? In this sample of two deaths, one undoubtedly would have been spared with belts, and perhaps two, an improvement of at least 50 per cent and possibly 100 per cent.

On April 27, 1956, Chief Lester R. Schick, of the Davenport Fire Department, wrote a letter to FIRE ENGINEERING, setting forth his firm belief in the value of seat belts. This letter carries much weight, since it was based on a personal experience

Continued on page 986

The Cover Story

Lumber plant conflagration strains Vancouver Fire Department

Extent of blaze and problem of log booms to fireboat operations is visible in aerial view

By CHIEF H. S. BIRD

Fireboats, although hampered by slack tide, maneuvered close to fire in latter stages and employed monitors with good effect

EARLY in the afternoon of Sunday, July 3, a massive fire involved the British Columbia Forest Products plant at 955 West 6th Avenue, Vancouver, B. C. Before being brought under control the flames threatened eight exposed plants and over 2,300 stored new automobiles. Early estimates of the losses include over $2 million to the involved plant and about $130,000 to the exposures.

The plant consisted of a large frame-construction sawmill and various related buildings, a large storage yard and the main offices for all the company's British Columbia operations. The premises are situated on the south shore of False Creek in the heart of the industrial area of the city.

The 1951 British Columbia Underwriters' Association report on the City of Vancouver fire defenses said in part about this location: "The entire district is marked by inferior frame construction with some fairly large lumber storage areas and a congestion of buildings. Granville Island has narrow roadways and poor water supply. The south shore is particularly noteworthy for large frame buildings with severe inter-exposure. To the south of it, is an inferior frame dwelling district. Water supply is inadequate.

"The potential conflagration hazard is quite pronounced on the south shore of False Creek and Granville Island, due to poor construction, congestion with exposure to immediately adjacent blocks, inaccessibility and poor water supply.

"The probability hazard is relieved only by favorable climatic conditions and good fire department response. The one fireboat serving the area is hampered by shallow waters and log booms in the creek."

Weather and Tide Conditions

Temperature:	70° F.
Humidity:	59 per cent
Wind:	South, southwest 10 mph
Tide:	2 hours before low slack at height of 7 feet

Note: This tide condition meant the fireboats were approaching the shore line on a falling tide.

Alarm response

The first alarm of fire was verbal, and was received from the captain of the fireboat "J. H. Carlisle" (4,500 igpm), one-half mile across False Creek opposite the mill. He stated as follows: "Captain J. Telosky reported that approximately five minutes prior to his calling the operator, he was looking south towards the British Columbia Forest Products Limited when he observed a column of smoke rise above the mill. Captain Telosky brought this to the attention of his crew and they discussed whether it was a fire or some rubbish burning. Captain Telosky then changed his shirt, just in case a fire was starting. After doing this and still seeing the thick smoke, he called the fire alarm operator and reported his findings, then instructed him to code him out, at which time he would take the fireboat over for a closer look."

As he left the dock, an alarm to the plant was broadcast over the department radio, and he knew that they had a large fire on their hands. A telegraph alarm was sounded at 5:26 p.m.

The second alarm was ordered by the first-in chief at 5:36 p.m. This assignment brought in 14 on-duty men and also called the first call

group of 100 off-duty men. This call group normally takes about one-half hour before additional manpower might be expected. However, due to the fire occurring shortly before the 6:00 p.m. change of shift, some 75 men, who were in the stations prior to coming on duty, responded immediately. A fourth alarm was struck upon the arrival of the chief of department and a fifth alarm at 6:21 p.m. with a special assignment for the Burrard Inlet fireboat at 6:33 p.m.

The calling of the second fireboat (16,000 igpm) entailed drawing all marine protection from Burrard Inlet, leaving that area unprotected from the waterfront side. This boat traveled a distance of 12 miles to reach the scene of the fire. The fourth alarm brought in another 16 men; the fifth, eight men and the special assignment for the fireboat, six men. All told, some 77 on-duty officers and men were at the fire. The fifth alarm also called the remaining entire off-duty call groups. Of the 385 men eligible for all call groups, 333 responded, including off-duty chiefs.

We now know that the fire originated in a pit under a planer. It is evident that the fire burned unnoticed under these open spaces until the fire was raging under the entire mill. There being no below-deck sprinklers, the fire spread rapidly and unchecked until large columns of smoke were visible. Approximately 80 per cent of the entire premises was on wood piling decked with heavy planking and some areas were filled in and topped with asphalt to facilitate the movement of lumber carriers.

Sprinklers installed above the decking in the buildings operated satisfactorily, but had little or no effect on the fire which in a very few minutes had almost involved the entire area. Further, some of the buildings in the plant were not sprinklered, one in particular in the timber grading shed immediately south of the sawmill. When this shed took fire, the fire simply went from bad to worse.

Several hundred sprinkler heads opened over the fire, but had little or no effect due to the lack of protection on the underside of the mill. The opening of these heads greatly reduced water pressures in the area and heat exposure caused delay in reaching shut-off valves to alleviate this difficulty.

Operations

On the arrival of the first companies (29 men including three on the fireboat), the building housing the sawmill was fully involved and spreading fast. The main seat of the fire appeared to be centered around one of the planers. The first-in fire crews attempted to attack, isolate and confine the fire to the building involved. However, after the initial size-up by the first-in chief from headquarters, it was realized that the entire area under the plant was involved.

These crews were driven out, losing some 3,900 feet of hose and other equipment in this action, and the operation then became one of writing off the plant and using a flanking method in an attempt to confine the fire by area.

Due to the fact that all north and south streets terminate at 6th Avenue, there were no access roads on the north side of 6th Avenue to the waterfront, and a solid mass of industrial buildings and sawmills converge on each other. Because the streets were not carried through to the waterfront, a more hazardous situation was created as there were no fire breaks and no street ends where a determined stand could be made. This situation caused the firemen, of necessity, to drag hose 600 to 700 feet.

Again, on the waterfront side, effective approach was difficult due to tide conditions and log booms in the area, resulting in the fireboats not being able to get close enough to use heavy monitors efficiently.

These conditions forced fire crews to try to cut through on each side in an effort to get to the waterfront. Heavy streams were used in depth on the flanks, concentrating on the windward side.

This operation was successful and enabled the first-in fireboat (which had been moved from the west to the east edge of the fire) to get six heavy 3-inch streams ashore via volunteer tugs, etc. Later when the second fireboat arrived, other large lines were fed ashore on the western edge.

It should be noted that after surveying the scene the next day, it is startling, to say the least, to see the ultimate possibilities and potential loss which could have occurred had the fire department not been able to stop the spread of fire as indicated.

Estimated losses to plant and exposures

	Building & Equipment Insurance Value	*Loss*
B. C. Forest Products Ltd.	$ 2,151,000	$2,151,000
Vancouver Iron Works		
1155 West 6th Avenue	5,497,500	1,000
Hodgson Walsh Wood Products		
908 West 6th Avenue	50,000	1,000
Alberta Lumber Co.		
790 West 6th Avenue	90,000	2,500
Vancouver Lumber Co.		
2005 Cambie Street	42,000	200
Bingham Equipment Co.		
897 West 6th Avenue	580,000	25,500
Mohawk Lumber Co.		
897 West 6th Avenue	10,000	10,000
B. C. Electric Co.		
970 Burrard Street (Transformers, poles, trackage, wiring, 4 box cars)	30,000	30,000
B. C. Telephone Co.		
796 Seymour Street (P.B.X. Board, numerous instruments, considerable wiring, frame office building)	2,500,000	40,000
2306 Automobiles (new) stored (various companies)	4,612,000	20,000
	$15,562,500	$2,281,200

Fire storm threatened

A minor fire storm seemed to be apparent over the area during the height of the fire. Sheets of corrugated iron and large chunks of glowing embers were flying around like leaves at several hundred feet above the area, and carried down-wind. Severe air and smoke turbulence was also noted and a newspaper helicopter reported severe turbulence on the edge of the area at 1,500 to 2,000 feet.

During the fire, maximum temperatures were apparent as the heavy fire

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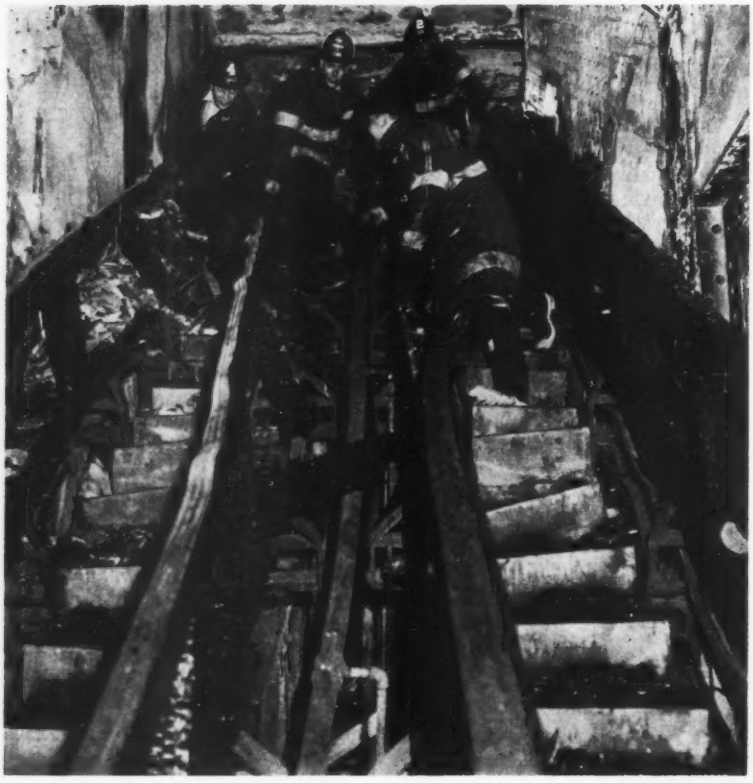


Fire fighters overhaul charred remains of I.R.T. Flushing Line escalator under Times Square. Twisted rails and warped steps made the operation difficult
Daily News photo

Hot stairway and tile walls get "wet-down" by engine company crew during late stages of fire fighting—*Daily News photo*

Fighting Subway Fires

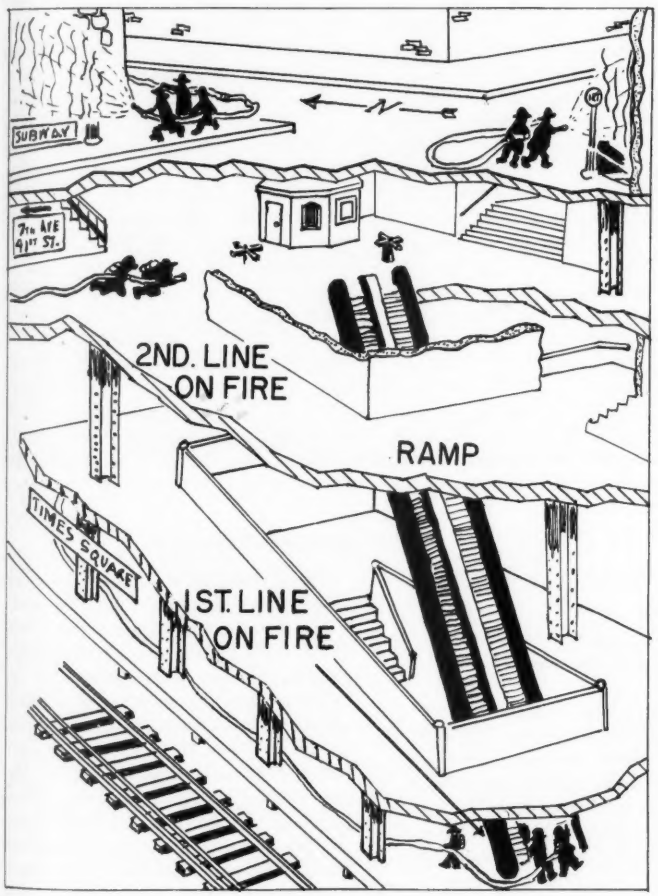
The following article was prepared by the authors as a result of recent serious fire emergencies in the New York City subway system. The problems faced and the method of solution are directly applicable to those few communities that have subterranean transit systems. However, the principles of operation are also applicable to building basement and subcellar fires where extensive areas are involved and large numbers of people are exposed. The actual fire fighting in the two emergencies concerned is considered only in an incidental manner. The main emphasis is placed on the command responsibility facing the officer in charge—The Editors.

SUBWAY FIRES are notorious for their potential life hazard even when only minor in extent. Recently, within a matter of weeks, there were two second-alarm fires in the New York City subway system. In one case, the fire was extensive, with a 60-foot wooden escalator fully involved. Fortunately, the life hazard did not fully materialize. In the other, the fire was minor in extent, involving debris (discarded insulated cable in a pile about 20 feet long, 8 feet wide, and 2 feet deep). In contrast, however, at the latter fire, the life hazard was severe, causing the hospitalization of about 200 people.

When compared to the average fire in buildings, a subway fire is a small one. The amount of burnable material is limited to wooden cross ties, platform planking, wood paneling, rubber and grease found about escalators, steel dust and rubbish such as newspapers and candy wrappers that accumulate between the tracks on the right of way, combustible electrical insulation and combustible seat covers in the cars. It is not the nature of the fire or its size and intensity that creates the potential life hazard, but rather its inaccessibility, the large numbers of people affected, limited access for fire fighting operations and limited egress for passengers and the lack of communication. Added to

Factors to be considered by fire officers during underground transit emergencies

By **RICHARD A. DENAHAN** and **CHARLES V. WALSH**
Assistant Chief *Deputy Chief*
New York Fire Department



these hazards are the dangers associated with "live" third rails, between 550 and 600 volts, and that of moving trains.

Not to be overlooked are the total darkness when power is lost and the limited means of relieving the heat and smoke to the atmosphere. Most New York subways rely upon sidewalk gratings and the normal movement of trains for ventilation. The trains, acting somewhat like huge pistons, push the air through the tunnel and out through the sidewalk grating. At points in the system where this is ineffective, large ventilating fans are provided.

It is not difficult to visualize the serious condition that is quickly built up when a smouldering fire occurs on a warm, humid day and the trains are stalled due to power failure or other causes. The smoke will hang at low levels because of the lack of thermal updraft and conditions will soon become untenable for the passengers.

A 10-car Interborough Rapid Transit subway train will, under rush-hour conditions, carry about 3,000 people, many of whom will be women. Some of the passengers will be old and infirm and some children will be among them. When it is considered that the trains may run on a 30-second headway during the rush hours and that the right of way may consist of four tracks, it will be realized that quite a few trains and thousands of people will be in the immediate area. The tracks may be on a single level or on as many as three levels, depending upon the point at which the incident occurs. It can be seen from the foregoing that the problem of evacuation may become acute in a very short time.

People are evacuated from the subway system by several methods, depending upon two factors—*power off* or *power on*.

Power on

1. By running the train into the next station or to the next emergency exit, or by reversing direction and backing into the last station or emergency exit.

2. By running several trains together, thus forming a long line of cars through which passengers may walk to the nearest station or emergency exit. These two methods require the complete cooperation of the transit authorities.

Power off

1. Evacuation of the cars via the side doors to the bench walk, thence to the nearest station or emergency exit.

2. Evacuation directly to the roadbed. This is necessary when there is no bench-walk available. This condition is prevalent on express tracks at points in the system where the right of way is four tracks wide on one level. This is the least desirable method as the passengers must walk along the cross ties which are grease-soaked and slippery. The ballast between the ties is of uneven height, and switches or "frogs" may be encountered at various points adding to the danger of injury. This method requires descending from the car to the roadbed and then climbing an iron ladder to the station platform or the emer-

Continued on page 989

Misconceptions concerning safety to life from fire

SOME 12,000 PERSONS lose their lives in fires each year in the United States. This fact was hardly cause for widespread public indignation until December 1, 1958. The disastrous fire that afternoon at Our Lady of Angels grade school in Chicago, in which 92 children and three nuns perished, set off an emotional tidal wave that swept across Chicago and into every school in the United States. The tidal wave is still moving. But corrective action, out of all this emotion, is plagued with confusion, misunderstandings, misconceptions, and red tape.

A month and a half after the disaster, the Chicago City Council passed an ordinance requiring the installation of automatic sprinkler systems in all existing schools of brick, ordinary joist or poorer construction, which were two stories or more in height. Along with this went a requirement for connecting manual fire alarm systems in all existing schools to city fire alarm boxes.

A month or so later, upon recommendation from the Coroner's Jury, the Mayor's Advisory Committee on Building Code Amendments recommended to the city council that some 22 additional fire safety features be enacted into law and applied retroactively to all existing school buildings. Public hearings were held on these additional amendments to the municipal code and testimony was taken from representatives of both the parochial and public school systems, appropriate municipal officials and other interested parties which included spokesmen from various special interest groups in the building construction industry. The end result of these hearings was a mass of confusing and contradictory testimony on what fire safety features would be required to insure that such a school fire disaster would not be repeated.

For example, opinions ranged all the way from recommending complete removal of all combustible interior trim, to flameproofing all of it, to suggesting that no further requirements were necessary because there was already an ordinance requiring complete automatic sprinkler system installations in existing schools!

Is it any wonder that municipal officials are at a loss when it comes to determining what specific fire safety regulations are necessary to provide reasonable life safety—yet not involve prohibitive expenditures. It's high time we clarify this controversy, and make certain that we place the various proposed fire safety features in perspective.

By GERALD L. MAATMAN

Associate Professor, Illinois Institute of Technology
Director, Department of Fire Protection and Safety Engineering

Professor Maatman graduated from Illinois Institute of Technology in 1951 with a B.S. degree in Fire Protection and Safety Engineering. His experience includes service with the Coast Guard where he was Fire Protection Officer for the Captain, Port of Los Angeles; and six years with the Illinois Inspection Bureau where he concentrated on sprinkler engineering and inspection and municipal fire protection engineering. In 1956, he became assistant chief engineer of the Bureau and served in that capacity until his appointment to the Illinois Institute faculty in 1959. He is a member of the Society of Fire Protection Engineers and serves that organization on its engineering education committee. He is also a member of the N.F.P.A. Membership Committee.

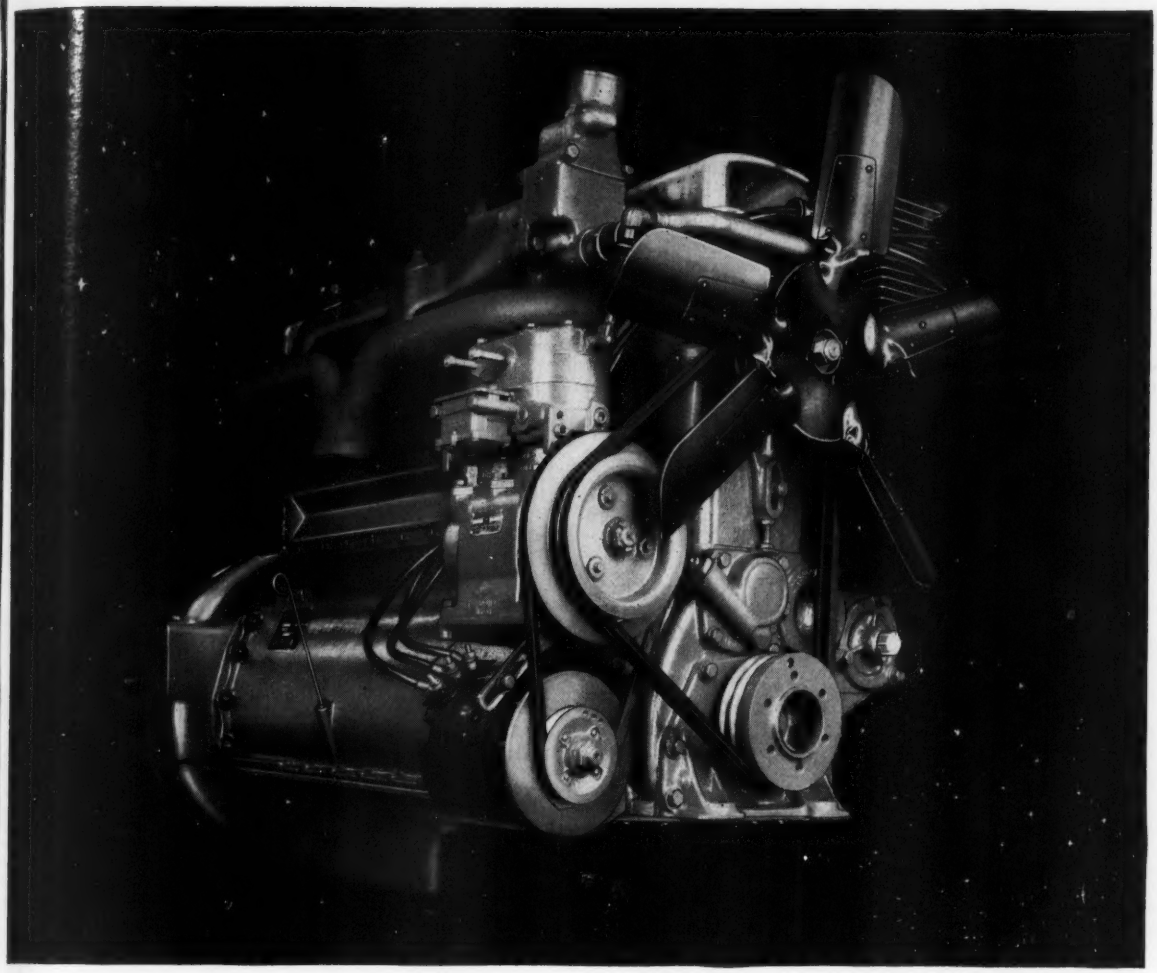
First of all, the Our Lady of Angels school fire was not the first large-loss-of-life fire nor, unfortunately, will it be the last of such disasters although an enlightened and dedicated effort can do much toward correcting the structural as well as human errors which make them possible. The records of all agencies which collect fire loss statistics include numerous examples of large-loss-of-life fire disasters down through the years. To name just a few of the more prominent ones, we need only to go back to the Iroquois Theater fire of 1903 in Chicago when 602 persons perished or the Lakeview School fire of 1908 in Collinwood, Ohio, where 175 children died. In more recent years, we have experienced the Cocoanut Grove Night Club fire of 1942 in Boston where some 492 persons died, the Winecoff and La Salle Hotel disasters of 1946 which contributed a total of 180 dead, and within the last two years, a nursing home fire in Warrenton, Mo., which accounted for 71 lives. The pattern of these fires has been basically the same and has taken place in every instance in a setting composed of a large concentration of human beings occupying a building that was built to spread fire.

Delayed discovery

The development of these fires has usually been along the following lines: A fire starts in one of the lower levels of the building and gains considerable headway before it is discovered or, in some cases, due to panic or the lack of adequate instructions after the discovery of an incipient fire, an alarm is not immediately transmitted to the fire department nor to the other occupants of the building. In either case, the fire has reached considerable intensity before the fire department arrives at the scene.

In the meantime, fed by the combustible contents found within the building and, in some cases, by the combustible materials forming a part of the structure or interior trim, the fire quickly intensifies, fanned by the natural flue effect of open stairways and other unprotected vertical openings. The latter two are undoubtedly the most hazardous common factor in all large-loss-of-life fires involving multistory buildings.

The hot gases and smoke which pre-



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cede the fire in its upward spread soon convert the corridors and open stairways into a veritable death trap. A short time thereafter, any exposed combustible materials located in the upper corridors and stairways have been raised to their ignition point and break out in flame, further adding to the intensity of an already humanly unbearable situation.

This has sometimes led to the mistaken conclusion that the simple elimination of any combustible finish in the stairways and corridors will provide the necessary safety factor. The fallacy of this conclusion was demonstrated in the 1959 series of fire tests in a Los Angeles school building where lethal temperatures and smoke densities were prevalent throughout the corridors before the combustible acoustical ceiling finish became involved.

If the Los Angeles test school fires were an actual emergency the occupants of the upper floors of the building, initially unable to use the corridors and interior open stairways because of the hot gases and smoke, would most likely find the conditions within the rooms unbearable as actual flaming occurs in the corridor. And those who cannot reach an exterior fire escape from their window, or cannot be rescued by fire department ladder equipment, either perish within their rooms or are killed, or seriously injured, by leaping from upper stories. Those persons located within rooms equipped with ordinary glass transoms most probably succumb to the effects of smoke and hot gases several minutes before the others, and, in many cases, even before actual flaming occurs on their floor level.

Slight variations

This story might vary a small extent from time to time but the same essential ingredients are usually always present: (1) Delay in discovery and/or delay in alarm transmission which in either case prevents early fire department rescue or extinguishment efforts; (2) open stairways and/or other unprotected vertical openings in multistory buildings which promote fire growth, and more important, quickly allow the entire access areas of the building to be filled with smoke and hot gases, cutting off the occupants from the use of the interior exit facilities (which may or may not be of adequate capacity); (3) the use of highly combustible interior trim and decorations which provides a media over which the fire can spread more rapidly and which is particularly subject to "flashover" or premature ignition before the main fire has progressed to a given floor level. This factor is obvious in one-story buildings such as the Cocoanut Grove Night Club where highly combustible decorations and synthetic leather wall coverings spread the fire rapidly throughout the structure.

As previously mentioned, the most important single contributing factor to large-loss-of-life fires has been without a doubt the lack of protection for stairways, elevator and dumbwaiter shafts, air conditioning and ventilating ducts, furred and concealed spaces and other vertical openings which pierce floor levels.

With proper enclosure of not only the required number of exits but also of all vertical openings, a delay in discovery and/or alarm transmission, or the presence of combustible trim in a multistory building, will not endanger occupants on floor levels remote from the fire for a considerable length of time.

This factor was brought out forcibly in the Our Lady of Angels fire. In this instance, there was a delay in discovery of the fire and an additional delay in notifying both the fire department and all occupants of the building. Yet despite the precious minutes lost by both these delays, and the presence of acoustical ceiling tile and other combustible trim in the first-floor corridor of the north wing of the school, all of the students on this floor level were able to file out of the exits at the front of the building simply because the rear stairwell, where the fire originated, was cut off from the first-floor corridor by an *approved Class B fire door*. Thus it is clear that the complete enclosure of all vertical openings and the provision of adequate exit capacity can in itself minimize or localize the life safety hazard to only that section of the building where the fire originates.

However, as it is obviously desirable to even further minimize the life safety hazard, it is appropriate to consider further measures to cut down the delay in discovery and transmission of the fire alarm to the fire department and the occupants of the building. As past experience has indicated that dependence cannot be placed on early human detection, it is necessary to turn to some type of automatic fire detection system.

The automatic sprinkler system, which has achieved an enviable performance record in this country, appears to fill the bill very adequately. This system not only provides for early local detection of a fire, but in addition, can be arranged to transmit an alarm to the municipal fire alarm headquarters. Also, the system serves the important dual role of an extinguishing agent in that its operation will extinguish the fire or at the very least hold it in check until the arrival of the fire department.

An alternate proposal which has been advocated by some authorities is the provision of an automatic heat-actuated fire detection system in lieu of a sprinkler system or in combination with a partial sprinkler system installation. If all vertical openings are enclosed, this writer can see no objection to this alternate method of protection, other than to point out that the advantage of a combined detection and extinguishing system would not be obtained by the first method and would be a matter of an educated guess with the second method.

If all vertical openings are protected and an automatic sprinkler system is provided, combustible interior finish and trim become less important simply because the ability of a fire to develop and spread has been seriously curtailed. This feature is recognized in both the National Building Code of the NBFU and the NFPA Building Exits Code which lessen their restrictions on interior finish to have a flame spread not in excess of 200 in corridors, exitways and rooms of over 100 persons capacity while normally these must be restricted to a flame spread not in excess of 75.

Restrict fire spread

If the building, due to its construction or low height, is not required to be sprinklered, then it appears reasonable to restrict somewhat more the use of combustible interior finish. Both the NFPA Building Exits Code and the National Building Code recognize this factor and require that the interior finish of walls and ceilings of corridors, exitways and rooms of over 100 persons capacity have a flame spread rating not in excess of 75 except for an allowable aggregate area of 10 percent which is permitted to have a flame spread rating not in excess of 200. Other portions of the building are allowed to have interior finish with a flame spread rating not in excess of 200.

One of the most common types of interior finish found in school buildings today is acoustical ceiling tile. There are two basic types which are manufactured in this country, one of which uses a mineral or gypsum base and is essentially an incombustible material, and the other which is composed mainly of cane or wood fibers processed into board forms and which

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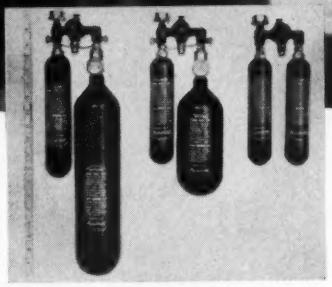

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the round table

discussion of current fire department and fire management problems

School Fire Prevention Practices

THIS IS THE THIRD installment of the Round Table on fire prevention practices in the schools.

Readers are invited to participate in this discussion which will be concluded in the November issue. Address replies to Round Table Editor, FIRE ENGINEERING, 466 Lexington Avenue, New York 17, N. Y.

The Discussion

Fred W. Lange, Chief, East Cleveland, Ohio: We regularly schedule public and private school fire prevention inspections. We have legal authority to inspect these schools and order violations corrected under provisions of our state code and also our city fire prevention code.

We do recommend that automatic sprinklers or automatic fire detectors be used in certain areas. Some of our schools now have sprinkler protection and also fire detectors near incinerator, boiler rooms and storage locations.

We have recommended that school fire alarm systems be connected directly to fire alarm headquarters and by the end of this year, this shall be completed.

We permit smoking in teachers lounge rooms and other similar rooms for teachers and custodial help. It is our opinion that they will smoke in hidden places if they are completely forbidden the practice.

We do have a program for instructing teachers and school janitorial help in the rudiments of fire prevention.

Our fire prevention officers at the start of each school year hold meetings with teachers and custodial help, showing them the use of extinguishers, the necessity of pulling the alarm immediately and evacuating the children properly during drill. Movies relating to fire are shown.

Robert Robertson, Chief, Boone, Iowa: We do have a regular inspection made of our schools which include public and private schools. We have always been invited three times during the term and have had the cooperation of the superintendent of schools and all the teaching staff.

We have asked for a sprinkler system to be placed in the high school building, knowing it is of ordinary construction, but we have only been successful in getting a manually operated fire alarm system throughout the building. We have this type of system in all our schools.

We permit smoking in teachers lounge rooms but hold the teachers, the janitors and also the superintendent responsible and expect them to set up some rules regulating the habits of the personnel in and around the buildings.

I attend the meetings of all the custodians of the county and try to give them help in eliminating some of the fire hazards that are set up in the way of waste paper accumulation, storage of mops and rags that have been used for waxing or for painting or wiping; how to care for work shops with industrial training connections; watching the gas-burning heating systems; checking the system and seeing that the furnaces are getting the proper amount of air intake in the furnace room for complete combustion, etc.

Edward B. McCabe, Chief, Milwaukee, Wis.: All schools in the City of Milwaukee below college level are required under state statute to be inspected by a member of the fire department for purposes of fire prevention four times a year, if located in the fire limits, and twice a year if outside the fire limits, during school hours. In addition, each fire company officer is required by department rule to inspect each school in his response area annually. This adds up to at least 20 men inspecting each school

Continued on page 977

THIS MONTH'S QUESTIONS

Do you regularly schedule public and private school fire prevention inspections? If so, do you have legal authority to inspect these schools and order violations corrected or are the inspections made on an "invitation and cooperation" basis?

Do you require automatic sprinklers or automatic fire detectors in school buildings?

Do you require that school fire alarm systems be connected directly to fire alarm headquarters?

Do you permit smoking in teachers' lounge rooms and similar restrooms?

Do you have a program for instructing teachers and school janitorial help in the rudiments of fire prevention? If so, briefly outline the subject matter.

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It's a fabric made of pure aluminum vapor-coated on lightweight rayon, asbestos, or glass cloth. Its bright aluminum finish reflects 90% of radiant heat. "Scotch·Shield" Fabric is extremely flexible and resists stress or tearing, won't peel or crack. Durability far exceeds other fabrics given equal heat exposure. It produces reflective-protective garments lighter than conventional bunker clothing—it eliminates the need for bulky insulation type gear. Return the coupon for literature describing "Scotch·Shield" Fabric and its uses in firefighting.

Try this heat test . . . within seconds the conventional bunker coat smoldered . . . "Scotch·Shield" Fabric garment protected for the duration of the 100 gallon spill fire!

Where can you buy

SCOTCH·SHIELD BRAND ALUMINIZED FABRIC

Garments made from "Scotch·Shield" Fabric are available through your regular fire equipment suppliers. Or you can secure the name of fabricators by checking the box in the coupon below.

Minnesota Mining and Manufacturing Company
Dept. RBX-100, St. Paul 6, Minn.

☐ Please send me additional information on "Scotch·Shield" Aluminized Fabric.

☐ Please send names of firms manufacturing "Scotch·Shield" Fabric garments.

Name_____

Title_____

Fire Dept. or Firm_____

Address_____

City_____ Zone____ State_____

MINNESOTA MINING AND MANUFACTURING COMPANY
...WHERE RESEARCH IS THE KEY TO TOMORROW
ST. PAUL 6, MINNESOTA

MIDWESTERN

Safety Clothing for Firemen

The Original STRIPED SAFETY COAT

The striped safety coat for firemen is an Original Midwestern development — first in the field — a leader ever since its introduction 19 years ago.

The BRILLIANT YELLOW stripes are actually rubberized into the black rubber . . . an exclusive feature that defies comparison with substitute or imitation models where the stripes are glued, sewed or painted on the material.

When working under hazardous conditions in smoke, fog, dust or darkness, firemen deserve the superior quality, design, comfort and safety features offered by the Original Midwestern Safety Coat.

Many Fire Chiefs who insist on the best of protection for the men of their department specify MIDWESTERN SAFETY garments to the last man because every outstanding Midwestern feature is original. All fabrics are extremely soft and flexible and have the qualities to stay that way at varying temperatures. You can always distinguish a MIDWESTERN SAFETY garment by the soft feeling of the material in both rubber and fabric type garments.

We have always designed and constructed our garments with the one thought . . . that every fireman deserves complete protection in his hazardous work of protecting life and property against the ravages of fire.

COMBINATION BUNKER SUITS

The many weights of both rubber coated and cloth type materials offered in our MIDWESTERN Quick-Hitch suit makes this combination ideal for all sections of the domestic market and export. Also, both coat and bunker pants may be purchased with or without detachable wool linings.

MIDWESTERN SAFETY MANUFACTURING CO.
Mackinaw, Illinois

☐ Have Midwestern representative call with complete information and prices.

☐ Send Free Catalog and fabric samples.

Name_____

Address_____

City_____ State_____

HOME GROWN WITHOUT THIS TRADE

MIDWESTERN SAFETY MFG. CO., Mackinaw, Ill.
Located in the heart of the Greater Peoria Manufacturing Area
Manufacturers of the Famous MACKINAW Safety Coat

FALSE ALARMS

K. O. in Round 1

The fire apparatus salesman was getting disgusted with his relations with the front office so he sent a telegram to his boss as follows:

"Must have raise at once or count me out."

The prompt reply read: "One, two, three, four, five, six, seven, eight, nine, ten."

A member of a university faculty noted for his tact, was awakened at 4 a.m. by his telephone. "Your dog is barking and keeping me awake," said the irate woman's voice.

The professor thanked her and hung up. The following morning at four, the woman's telephone rang. "Madam," said the professor, "I have no dog."

"Well, I must go home and explain things to my wife," the man said, looking at his watch.

His bachelor friend looked at him with astonishment. "What things?"

The married man shrugged his shoulders. "How do I know?"

Universal Elixir

Salesman: "Sir, I have something here that's guaranteed to make you the life of the party, allow you to win friends, influence people, and, in general, make life a more pleasant place and an invigorating experience."

Old Timer: "Say no more, I'll take a fifth."

A little boy and a little girl were walking down a street on the outskirts of the city. They passed a sign on a building that read "Smith Manufacturing Company."

"Oh," cried the little girl, "so that's where all the Smiths come from!"

A bore is someone who talks when you want him to listen.

Cold Logic

Kinkchaser leaned on the company mess table, looking very downcast. His captain noticed him and asked what was troubling him.

He replied: "I went to my doctor yesterday about my lapses in memory."

His skipper asked: "What did he do?"

Kinkchaser, looking more forlorn than ever, replied: "He made me pay in advance."

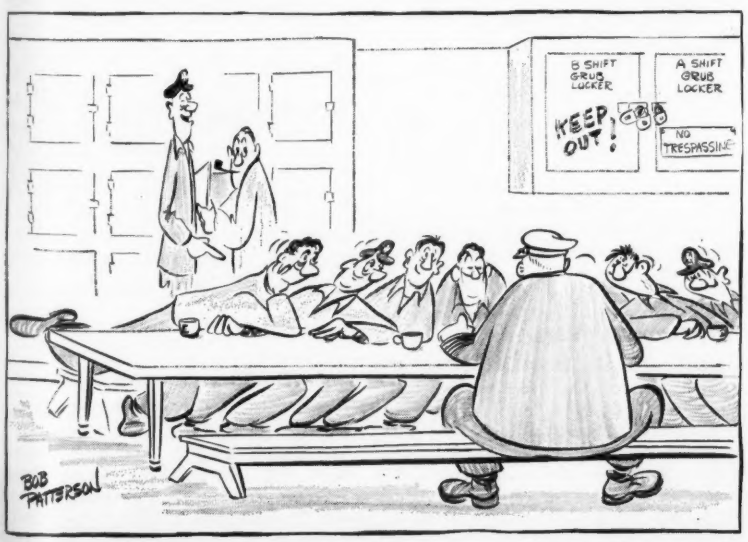
Bright Reflection

The fire station wit was exclaiming to the company about his talents and stated: "I have a real sense of humor. Everytime I see something funny, I have to laugh."

One of his fed-up buddies sarcastically remarked: "You must have a pretty tough time shaving."

Doctor: "You have acute appendicitis."

Sophisticated Lass: "Listen, Doc, I came here to be examined, not admired."



"Some of those guys are concentrating so hard on how to look properly attentive that they're missing half of what the old man says!"

Side Hill Fireman

The Old Timer staggered out of a neighborhood bar and while attempting to correct his directional aim wound up walking with one foot in the gutter and the other on the curb. As he laboriously made his way home, he was noticed by the fire department chaplain returning from a third-alarm blaze.

Stopping his car, the chaplain called to the old rounder and said, "Aha Mike! Drunk again and, of all things, walking in the gutter!"

Visibly relieved, the unabashed souse called back, "I'm so happy you told me, Chaplain, I thought I was crippled for life!"

Bill Murray

Hay is something we must make between the time we get out of and the time we hit it.

Keep your words soft and sweet. You never know when you may have to eat them.

The Old Timer came stumbling in at 3 a.m., contrite and full of excuses.

Wife: "Why did you get drunk in the first place?"

Old Timer: "It wasn't the first place. It was the last place."

A husband is a man who wishes he had as much fun when he is out as his wife thinks he does.

The optimist is a person who always wants to cheer you up when things are going his way.

There's one thing to be said of ignorance—it sure causes a lot of interesting arguments.

A secretary who was resigning from her job to have a baby, wrote: "Dear Boss: I am getting too big for this job . . ."

Acknowledgment

The cartoon series "Why Chiefs Prefer Big Men in the Truck Company" which occupied most of the False Alarm page in the September 1960 issue was the creation of Dispatcher Lyle H. Wilkinson, Downey, Calif., Fire Department.

The Editors

WHAT'S NEW

Among the Manufacturers

- **products**
- **processes**
- **personalities**

Memphis Coach Ambulance

Pleasant Valley, N. Y., Fire District No. 1 recently received its new Ford Fairlane "500" ambulance built by Memphis Coach Co., Memphis, Tenn. The new unit was delivered in Memphis to Fire Commissioner Herbert Oakley, who with Fireman R. Parks, drove the vehicle to its Dutchess County, N. Y., fire station.

Portable Gas Detector

Houston Instrument Corp., P. O. Box 22234, Houston 27, Tex., is offering a new probe-type gas detector, Model 504. Powered by a nickel-cadmium battery with built-in charger for use with 110v. a.c., it can be calibrated on request for the lower explosive limit of any gas desired.

New LaFrance Aerials for FDNY

Within four months of receiving the approved contract drawings, American LaFrance, Elmira, N. Y., has built and delivered 13 tractor-drawn, 100-foot all-steel aerial ladder trucks to the City of New York. This delivery brings to 46 the total number of American LaFrance aerials now in service in New York City. Powered with 275-hp engines, they include several innovations. A water tower hose and nozzle is mounted underneath the ladder with one-man controls located on the turntable platform. Safety features for the firemen include individual safety belts and a padded dash, as well as twin air horns mounted on the top of the windshield. These are in addition to the regular sirens and bells.

Gerson Buys Edcor Interest

Edward Gerson, who was the principal organizer of the Edcor Safety Equipment Company three years ago, recently acquired the interest of William J. Kessler in the firm.

Edcor's offices are at 811 West 17th Street, Kansas City 8, Mo. The Company supplies fire and safety equipment in Kansas City and within a 200-mile radius of the city. It is also the area warehouse distributor for the General Fire Extinguisher Company.

Robbins 400 Valve

Robbins Aviation, Inc., 2350 East 38th Street, Los Angeles, Calif., has developed a stainless steel ¾ inch valve for use with oxygen, gases, fuels, etc., under extreme pressure. It is claimed the valve can be shut off bubble-tight against 12,000 psi with only 30-inch-pounds handle torque.

New Home Office

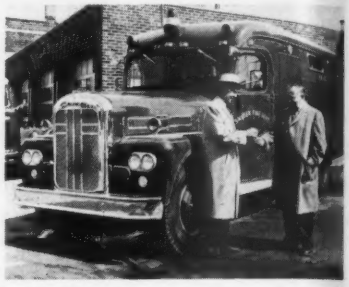
American Fire Alarm Co., Inc. recently occupied its modern executive and operational offices at 909 N. E. Davis Street, Portland 12, Ore. The building provides 32,000 square feet of floor space on two levels and features both automatic fire alarm and sprinkler systems connected directly to the fire department.

Two-Rate Rectifiers

Exide Industrial Division, The Electric Storage Battery Co., Rising Sun and Adams Avenue, Philadelphia 20, Pa., has announced a new group of two-rate rectifier charges said to be for use with stationary batteries of from 6 to 60 cells. Operating on 110 or 220-volt, single-phase, 60-cycle a.c., they are said to be available in four models with manual or automatic controls for rate changing and shutoff.

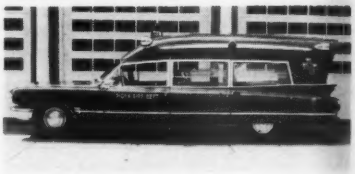
New Rescue Unit

Gerstenslager Co., Wooster, Ohio, recently delivered this new rescue unit to the Snyder, N. Y., Fire Department. Built on a Ward La France Model 185-T chassis, it is designed to carry four cots on removable brackets and provide seats



on each side for crew members. A portable pump and generator are mounted on sliding trays in side compartments and the oxygen bottle storage is available either from the interior or exterior. The electrical system is a combination of 12-volt and 110-volt with exterior outlets.

New M-M in Piqua



The Piqua, Ohio, Division of Fire recently was presented this new Miller-Meteor Guardian Ambulance following a fund-raising campaign sponsored by the Schnell-Westfall Post 184, American Legion. The custom-built emergency vehicle is on a Cadillac chassis and has 52-inch headroom over the four-litter interior. A germicidal ultraviolet lamp is included to sanitize the interior.

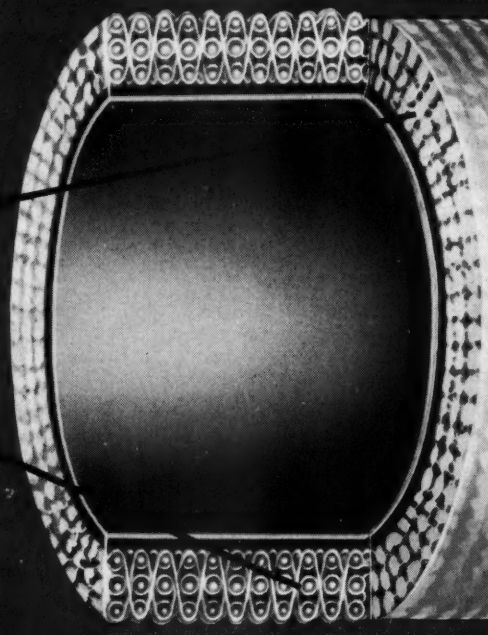
New Fire Station Door

The OVERdoor Division, Barber-Colman Co., Rockford, Ill., is offering large overhead-type doors for use in fire stations employing multiple doors. By employing large single doors the company claims certain construction and operating economies are possible.

New Du Mont Contract

A contract for $269,000 has been awarded to the Mobile Communications Division of Allen B. Du Mont Laboratories, Inc., Clifton, N. J., to completely re-equip the entire fire department of San Francisco, Calif., with two-way radio communications. According to the contract, Du Mont will furnish all equipment and make the installations of mo-

Multi-woven means a one-piece jacket



Cutaway shows seamless multi-woven one-piece jacket. This can be woven only on Eureka's unique ultra-precision looms.

Cross section shows how the Eureka-designed loom weaves extra cords back and forth, binding all plies together.

EUREKA

Super Paragon®

100% Dacron

The Eureka® Multi-Woven 100% Dacron Super Paragon does not use a cover to reinforce a cover. It doesn't need to because the exclusive multi-woven construction invented and perfected by Eureka makes this the strongest hose on the market without the use of "crutches." (600 lbs. test pressure.)

When you try to make a hose strong by building up a layer upon layer of jacket, you set up abrasion and you kink the hose. When the rubber tube breaks down under this treatment, as it must, it is difficult, if not impossible, to locate the rupture because water pours between the jackets. Eureka Multi-Woven has one, and only one, jacket.

Eureka is the hose that cannot be matched—it never lets you down. One sure way to get the dependability enjoyed by those cities which use Eureka is to give your order to your Eureka agent right away for the unique Eureka Multi-Woven 100% Dacron Super Paragon.

EUREKA

"For greater protection to life and property

EUREKA FIRE HOSE

Since 1875, Specialists in Manufacturing Circular-Woven Rubber-Lined Fire Hose

1 Market Street • Passaic, New Jersey *Division of* United States Rubber

bile radio units in fire department vehicles, necessary base stations, secondary base stations, and monitor units throughout the city and at San Francisco International Airport. The entire installation was scheduled for completion by September 15 of this year.

Du Mont recently completed a $235,000 contract to modernize and engineer the San Francisco Police Department two-way communications system.

New G-E Portable

General Electric Communication Products Department, P. O. Box 4197, Lynchburg, Va., has designed a new portable two-way radio which incorporates nickel cadmium power supply and a built-in battery charger used with a 12-volt d.c. vehicular system or 117-volt a.c. It is claimed the unit can be recharged from a car cigarette lighter or an electrical outlet. The new unit contains an all-transistorized receiver and can be operated in the 25–54 mc. or 144–174 mc. bands.

Day-Glo Industrial Uses

Switzer Brothers, Inc., 4732 St. Clair Avenue, Cleveland 3, Ohio, recently supplied the Timken Roller Bearing Co., Canton, Ohio, with Day-Glo fluorescent paint to complete marking of all mobile and stationary vehicles and safety equipment. Among the items were 40 fire hydrants painted in rocket red.

U. S. Resuscitators In Japan

The Stephenson Corporation, Red Bank, N. J., recently shipped 70 Minuteman resuscitators to Japanese fire service authorities in Tokyo. They are being employed on fire agency ambulances which serve the city's 23 wards.

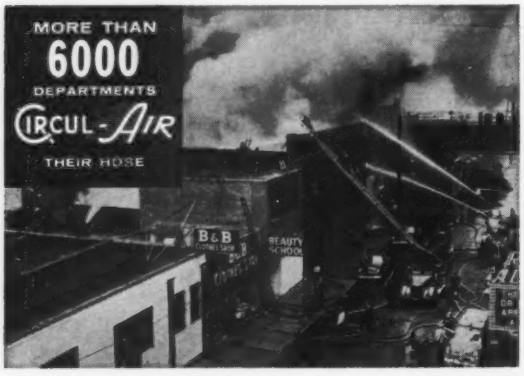
Acoustical Tile Ratings

Armstrong Cork Corp., Lancaster, Pa., has announced that its Acoustical Fire Guard ceiling tile recently has been granted new UL ratings, in addition to the two-hour rating given it in January 1959. Through recent tests the tile, when combined with a cellular steel deck and a 2½ inch concrete floor assembly, received a four-hour rating. Used with floor and ceiling assembly consisting of wood joists and wood floor, it attained a one-hour rating.

Pashkow Heads Ward LaFrance

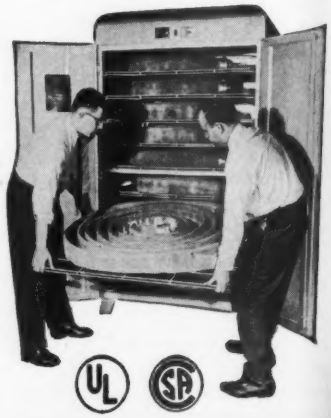
William B. Pashkow has been named president of Ward LaFrance Truck Corporation, Elmira Heights, N. Y. For the past five years, he has been associated with Mack Trucks, Inc., most recently as manager of government product development in Dayton, Ohio.

His appointment marks his return to Ward LaFrance, having been director of engineering for the firm from 1950 to



Don't gamble with the life and serviceability of your fire hose. Good hose will provide years of trouble-free service ONLY if it is* washed *thoroughly and uniformly,* dried *quickly and* stored *safely.

CIRCUL-AIR lengthens hose life and keeps hose in top condition

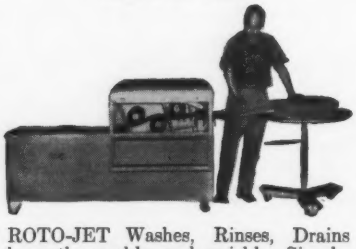


PORTO-RAK

The fast, modern way to handle, store and load hose.

Saves space. Holds 1800 ft. of 2½" hose—proportionately more of 1½". Roll it right up to the truck for complete hose reload—out of the way when not in use.

ROTO-JET



ROTO-JET Washes, Rinses, Drains hose thoroughly and quickly. Simple, one-man operation. With or without detergents, ashes, dirt, mud and sludge are automatically scrubbed out and flushed away.

FIRE HOSE DRYER

The patented, electrically operated Circul-Air hose dryer circulates prewarmed fresh air through loosely coiled hose at the rate of 5 to 6 air changes per minute. Saves floor space, hard work and lengthens hose life. No other drying method is so fast—so economical—so easy to use. Circul-Air is the preferred drying method in over 6,000 leading Fire Departments.

Write for Literature
Booklet (No. 5) "Fire Station Design"
Now Available

THE CIRCUL-AIR CORPORATION
575 EAST MILWAUKEE
DETROIT 2, MICHIGAN

Just a quarter turn

does the job, with a

BALL *type* VALVE & SIAMESE

"Quick as a wink"—full stream or complete shut-off—at any pressure. Straight-through waterway. Both Valve and Siamese come with either pin lug or "Sensible" lug swivel. Built for rugged service—body painted red, polished bronze or chromium trim—size: Siamese—2½" x 1½" x 1½", Valve—1½" and 2½". Specify "Ball Type" by Powhatan.

you can bank on POWHATAN for the best in brass goods

DURA-FOG NOZZLE . . . .

Here's the sweetest little fog nozzle you'll ever use. Exceptionally fine dispersion with less water. Every Nozzle factory tested and 100% perfect performance guaranteed. Try this one at our expense. Just write us on your company letterhead —we'll send one on trial.

SUPER-FORGE COUPLING.

The toughest, tightest, lightest coupling on the market. Drop forged for tougher service. Non-corrosive—can't rust. Comes with three "Sensible" lugs on both male and female, with Higbee Indicators. Always specify "Super-Forge".

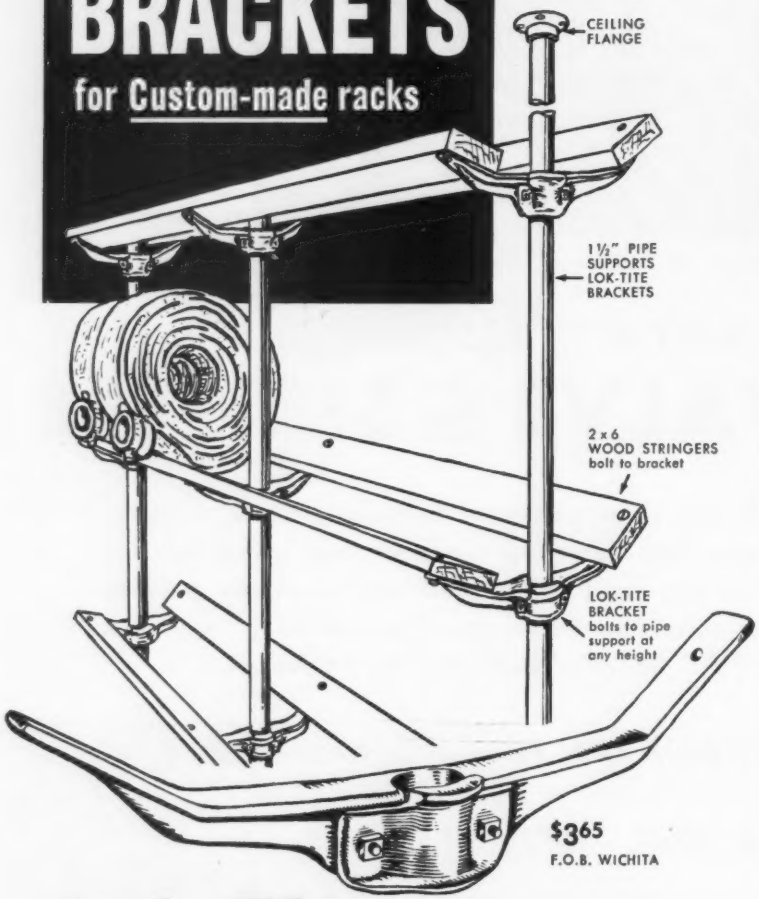
POWHATAN

BRASS & IRON WORKS

RANSON, WEST VIRGINIA

In The Same Location Since 1892

HOSE
BRACKETS
for Custom-made racks


CEILING FLANGE
1½" PIPE SUPPORTS LOK-TITE BRACKETS
2 x 6 WOOD STRINGERS bolt to bracket
LOK-TITE BRACKET bolts to pipe support at any height
$365
F.O.B. WICHITA

Lok-Tite brackets
Convert waste space to valuable storage

LOK-TITE brackets are ideal for odd dimension areas where ready-made storage will not fit. LOK-TITE brackets encourage good housekeeping . . . assures easy hose inspection and correct ventilation. LOK-TITE brackets are approved by fire hose manufacturers and fire departments everywhere.

W-B MANUFACTURING COMPANY
157 N. WACO • WICHITA, KANSAS

Please send me_____brackets @ $3.65.

NAME_____

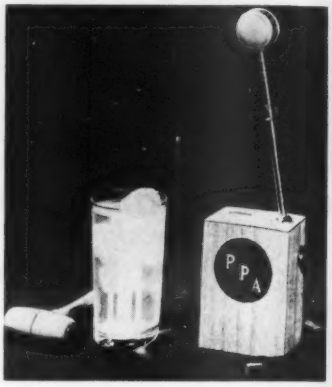
STREET_____

CITY_____STATE_____

- Simple to install
- Easy to adjust
- Big load support

1954. He had previously been president of National Truck Sales Corp. in New Jersey. He is a member of the Society of Automotive Engineers and the American Ordnance Association.

Personal P. A. System



J. B. Moore Laboratories, Inc., P. O. Box 606, Opa-Locka, Fla., is marketing its "PPA" personal portable address system for use by instructors, lecturers, etc. Powered by a 9-volt mercury battery and enclosed in a formica case, the unit may be worn on the person or placed on a deck or table. The microphone is mounted on an extendable boom and the entire assembly is said to weigh only 11 ounces.

Publications Available

National Foam System, Inc., West Chester, Pa., announces a 12-page guide book on means of combating fire on marine docks. Among subjects covered are portable extinguishers, hydrant systems, sprinkler systems, and methods of using carbon dioxide and dry chemical as well as foam.

Standard Fire Alarm and Signal, Inc., 100 Old York Road, Jenkintown, Pa., has issued a two-color folder describing how its non-electric automatic fire detection and alarm unit may be employed in homes. Ask for Bulletin 29.

Mine Safety Appliances Co., 201 North Braddock Avenue, Pittsburgh 8, Pa., has published a flyer which describes the new M-S-A flip-top box for multiple-use first-aid units. Ask for Bulletin 0401-8.

Kenco Pump Division, The American Crucible Products Co., 1305 Oberlin Avenue, Lorain, Ohio, has published a 10-page illustrated catalog-data file on its line of submersible portable pumps. Included is its Model 109 which recently received UL listing.

Channing L. Bete Co., Inc., Greenfield, Mass., has published a scriptographic booklet "Any Fire-Traps in Your Home?" as an aid in educating homeowners in ways of preventing fire. Single copies can be obtained for 25 cents. □□

Among the Buffs

By Paul C. Ditzel

WHEN I relinquished the soapbox in the July stanza for "Poor Ferdie" to air his gripes at the prospect of women firemen I knew it was inevitable that a rejoinder would not be long in coming. It wasn't. And I wasn't surprised, either, that the first to step up to bat at "Poor Ferdie" was this column's constant femme reader, Ruth Conradi, wife of that intrepid Newark buff, Bill Conradi.

"There is," snaps Ruth, "one of three things wrong with 'Poor Ferdie.' He is a woman-hater . . . bachelor . . . or married to a little woman who gives him all of the gripes he writes about. There are hundreds of women all over this land of ours who would be first in line—if the call came for help—to man the lines."

Ruth mentions names, too:

Anita Holz, Cincinnati; Lois Cole, Jersey City; Marie Burch, Detroit; Mrs. Henry Nathan, Baltimore; Mrs. H. R. Franz, Milwaukee; Peggy Gottschalk, Newark; Hazel Perkins, Boston; and Ruth Alton, Whittier, Calif.

Mrs. Conradi (and I pity the guy who ribs Bill about being a buff in the presence of his wife) takes up Ferdie's gripes:

1. Uniforms. "That is an easy one. Most of the firefanettes wear slacks."

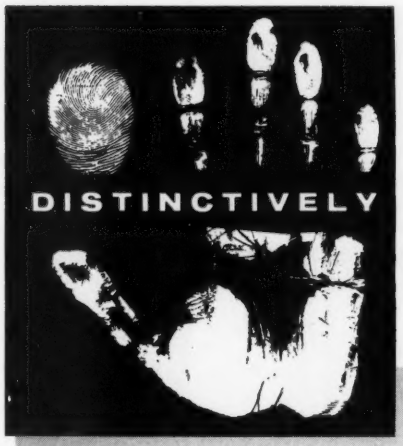
2. Unity. "We would all get along wonderfully; each with but one house duty to perform. That would be heaven to all of us.

3. Orders. "Any employer will tell you women are more acceptable to taking orders than men, even if it doesn't suit them." (Ed. Note: What employer have *you* been talking to, Ruth?)

4. Primping. "Primping, as Ferdie calls it, is the least of all problems. Women of today can adjust themselves to any situation when called to do so. He seems to forget that today we have women taxi and bus drivers, grease monkeys, painters, masons, plumbers, carpenters . . . to name just a few.

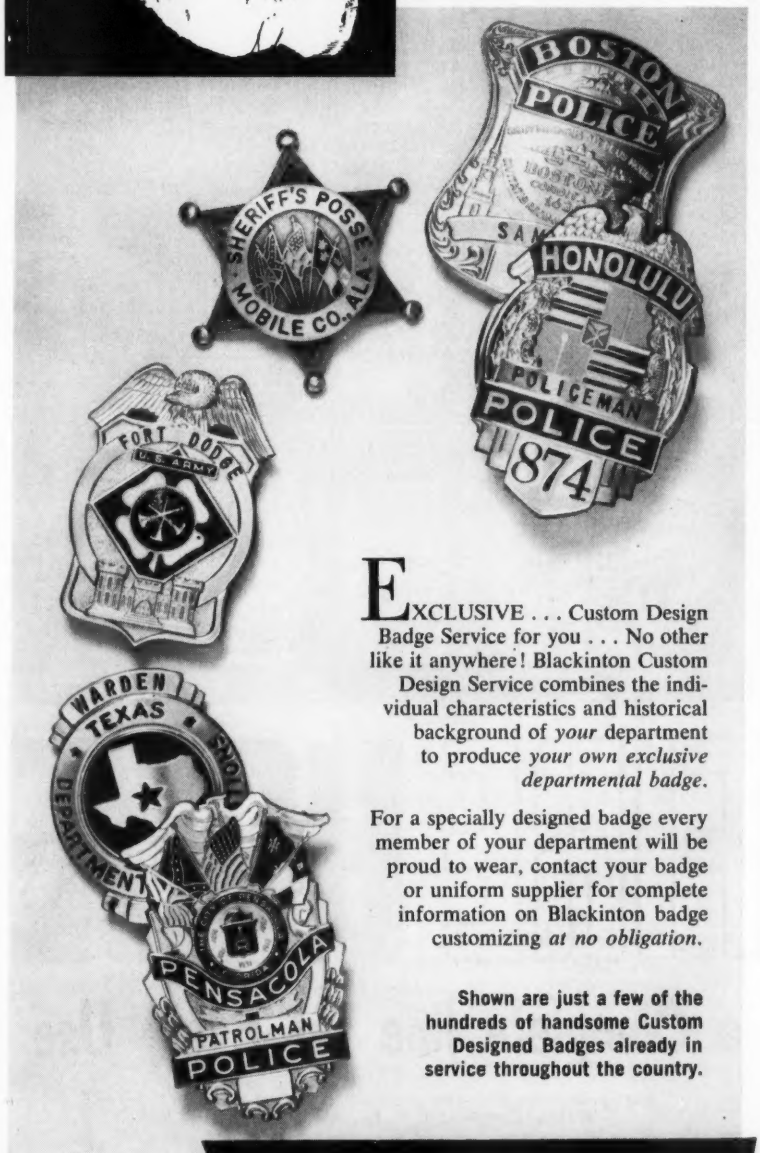
(No wonder the world is in such a helluva state. Just imagine all those multi-million dollar losses we'd avert if women were paramount on the firelines.)

As an additional postscript—and then let's blow the whistle on this tack—Firefan Stan Helberg of 6435 South Campbell Avenue, Chicago 29, sends along a clipping taken from the *Chicago Tribune*. Bylined by what Stan calls "Anodder Dame!" the story claims that the members of Engine 65 and Hook and Ladder 62 "can devour 22 pounds of beef in one day." Sez Stan in commenting on this and a fire story by a woman in a national magazine: "Imagine a DAME trying to write fire stories!" And with that I'm leaving for Cape Canaveral and the next flight to the moon before all those erstwhile lady buffs catch up with me. And Helberg.



YOURS

Just as fingerprints identify every individual, your badge should reflect the individuality of your department.



EXCLUSIVE . . . Custom Design Badge Service for you . . . No other like it anywhere! Blackinton Custom Design Service combines the individual characteristics and historical background of *your* department to produce *your own exclusive departmental badge.*

For a specially designed badge every member of your department will be proud to wear, contact your badge or uniform supplier for complete information on Blackinton badge customizing *at no obligation.*

Shown are just a few of the hundreds of handsome Custom Designed Badges already in service throughout the country.

Available through your badge supplier

BLACKINTON

V. H. BLACKINTON & CO., INC. • Attleboro Falls, Mass.

REPUBLIC

FIRE HOSE

a Complete line for Every Use

Write Dept. "D" for new catalog.

REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS

CODAFLEX • AERO • CHAMPION • REPUBLIC 600 • DACRO PRENE • TARGET • RELIEF • FLEXFOLD

A recent visitor to Los Angeles was Assistant Fire Commissioner Al Petersen of Chicago, along with his beautiful wife. Together we attended the Art Linkletter Show in Television City.

Buff Edwin D. Charney, 90 Tracey Place, Apartment N-1, Englewood, N. J., sends along a bumper sticker. The brilliant orange and black emblem is circular and bears the words, "Fire Buff" above and below a field showing a helmet, axe, ladder, and pike pole. "Thought you would be interested in this emblem that can be applied to a car or anywhere else. I recently had some made up. They cost three for $1.00."

Editor Doc Levin of the Phoenix Society's newspaper up in San Francisco tells about one of Manhattan's buffs who was unable to respond to a fifth alarm only 3 miles away because he was working on the rewrite desk. The buff was John Weisberger. I can sympathize with him as this happened to me countless times both in Chicago and Los Angeles.

Doc also says that a recent three-bagger involving a roofing company plant near Candlestick Park was off and running when the San Francisco Giants had just begun a game with the Pirates. And yet, says Doc who has a notable lack of understanding in such matters, one of the Society's most active buffs and man-about-town, stayed in his box seat while the heavy black smoke billowed.

That's about the sizeup until the bells go down again next month. Please continue to send your news notes and buff notices to me at 4234 Don Diablo Drive, Los Angeles 8, Calif. Firefanettes' purple-scented stationery will not be accepted —by my wife, at least. □□

What's Burning

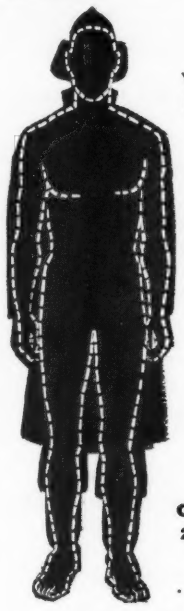
THE FOLLOWING LIST includes fires of $10,000 and over in the United States and Canada for the period from August 17th to September 18th.

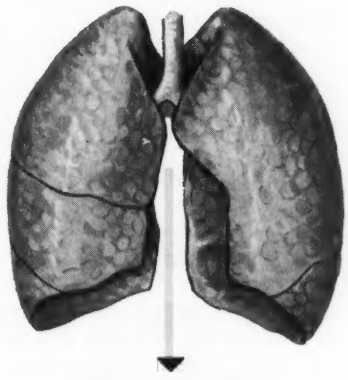
Harrisburg, Ark.—Harrisburg High School gymnasium damaged. Arson suspected.
Little Rock, Ark.—Safeway food store at West 12th and Lewis Streets destroyed.
Marked Tree, Ark.—Roach Grocery Store and Hart's Auto Parts Store destroyed. Trash pile.
Trumann, Ark.—Cotton Boll Night Club destroyed.
Butte County, Calif.—Feather Falls Mill housing logged timber, damaged. Lightning.
Manteca, Calif.—St. Anthony's Catholic Church destroyed.
Palo Alto, Calif.—Phi Gamma Delta fraternity house, Stanford University campus, destroyed.
Redwood City, Calif.—Van Way Tool & Die Co. destroyed. Ruptured fuel line.
San Francisco, Calif.—Apartment dwelling at 1717 Jones Street damaged.
San Francisco, Calif.—Three-story industrial building at 1155 Mission Street damaged.
San Jose, Calif.—Blum's women's apparel store damaged.
San Rafael, Calif.—J. B. Rice Building, housing O'Neill & Logan Hardware, Rafael Floor Covering Co., Rafael Appliances, Trend Draperies, Ferrari's Credit Rating Co. and other firms, damaged.
Stanford, Calif.—Temporary building housing geography department at Stanford University destroyed.
Amston, Conn.—Amston Plastic Engineering Co. considerably damaged.

Coventry, Conn.—Duplex apartment dwelling considerably damaged.
Greenwich, Conn.—Greenwich Country Club destroyed.
Hartford, Conn.—Canada Dry Bottling Co. damaged badly.
New Haven, Conn.—Co-operative Consumers of New Haven Inc. damaged.
New Haven, Conn.—Loft building at Chapel and Chestnut Streets, due for demolition, destroyed; St. Louis Church and school and several nearby houses, damaged.
Waterbury, Conn.—Seventy-five-year-old Congregational Church destroyed.
Rehoboth Beach, Del.—Gem Restaurant destroyed.
Washington, D. C.—T-5 building on south of Ft. Leslie J. McNair grounds destroyed.
Albany, Ga.—Divine & Busbee law offices and vacant store destroyed; My Shoppe, Louis Annelle store and Goldsmith's men's store, damaged.
Dublin, Ga.—Cordell Lumber Co. plant damaged.
Lafayette, Ga.—Warehouses of Chapman Brothers, farm machinery dealers, and Texas Co., oil products distributors, destroyed.
Green Creek, Idaho—St. Anthony's Catholic Church destroyed.
Armington, Ill.—Federal North Grain Co. elevator destroyed.
Carpentersville, Ill.—W. T. Grant store in Meadowville Shopping Center damaged.
Granite City, Ill.—Hundley Pontiac Co. destroyed.
Mattoon, Ill.—Cross Furniture Mart badly damaged.
Peoria, Ill.—Gold Star Homes office and warehouse destroyed; adjacent radio service and dwelling damaged.
Streator, Ill.—Building housing Paris Cloak Co., women's clothing shop, heavily damaged.
Evansville, Ind.—Lincoln High School damaged. Arson.
Indianapolis, Ind.—Indiana Grain Co-op elevator damaged. Explosion.
Monticello, Ind.—Former Stagecoach Hotel, now dwelling of Grover Ball, destroyed.
Muncie, Ind.—Bargain Shoe Store damaged. Trash fire sparks.
Pine Village, Ind.—Standard Elevator Co. grain elevator destroyed.
Vincennes, Ind.—Van Meter Sporting Goods Store and adjoining Davidson Music Co. and Kahre Jewelers destroyed.
Amana, Iowa—Ox Yoke Inn damaged.
Dexter, Iowa—Building used as a warehouse by owner, Charles Willrich, destroyed.
Fort Dodge, Iowa—Drive-In-Lumber Mart destroyed.
Jefferson, Iowa—Safeway Supermarket building destroyed.
Remsen, Iowa—Bowling alley of Ed Singer destroyed.
Cave City, Ky.—Dixie Hotel damaged.
Louisville, Ky.—Iroquois Park tool shed and its contents, which included four tractors and other caretaking equipment, destroyed.
Louisville, Ky.—Pacific Plywood Products Co. loading dock and railroad boxcar damaged.
Louisville, Ky.—Eleven-story Francis Building, housing military and professional offices, damaged.
Paducah, Ky.—Paducah Laundry & Cleaners badly damaged.
Presque Isle, Me.—Potato house of Milton McBride and J. Victor Hoyt and another house of Cobby Downing and Stewart Donohue, destroyed.
Baltimore, Md.—Dixie Waste Co. destroyed.
Newark, Md.—Ralph L. Mason tomato canning plant destroyed. Short circuit.
Salisbury, Md.—Building occupied by confectionery store, pet shop, laundry and barber shop, destroyed.
Beverly, Mass.—North Beverly Hardware Co. building damaged.
Cambridge, Mass.—Apartment dwelling at 20-22-24 Marion Street damaged.
Chelsea, Mass.—Business building housing drug store, hardware and professional offices, damaged.
Fall River, Mass.—Building housing Made-Rite Potato Chip Co. and Salvo Machine Co., damaged.
Ft. Devens, Mass.—National Guard building which was used as a warehouse in National Guard area of Fort Devens destroyed.
Holyoke, Mass.—Building housing Shorty's Res-

IT'S A FACT

"The Scott Air-Pak Protects 40 Times More of Your Body Than ALL of Your Outer Clothing!"





Sounds incredible doesn't it, and yet it's true. The total surface area of the millions of tiny cells in an adult pair of lungs is about 800 to 900 square feet. This is 40 to 50 times greater than the entire skin area of the human body!

Is it any wonder then, that when this vital lung area is exposed to smoke or toxic fumes, serious damage may result — yes, even death?

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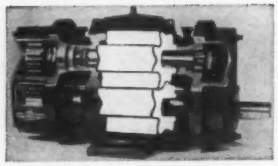
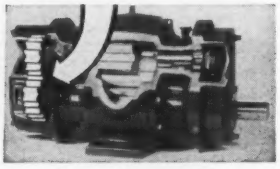
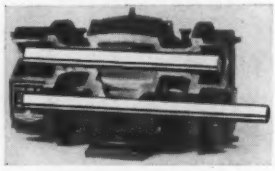


Hardened Bronze Impellers



Outboard Driving Gears



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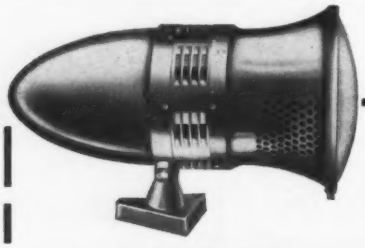

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taurant, Russo's Cash Register Exchange and apartments, considerably damaged.
Natick, Mass.—Country Club of Natick damaged.
Scituate, Mass.—Building housing Satuit Bar & Grille and apartments, badly damaged.
Southbridge, Mass.—United Lens Co., Inc. damaged. Overheated furnace.
Ann Arbor, Mich.—Montgomery Ward & Co. store damaged.
Flushing, Mich.—S & M Lumber Co. damaged.
St. Clair, Mich.—Two barns and granary on Arthur Pauley Jr. farm destroyed. Overheated electric fan.
Bowling Green, Mo.—Building housing department and variety stores, offices and apartments and adjoining buildings, damaged.
Springfield, Mo.—Coliseum and several exhibition buildings at Ozark Empire Fairgrounds destroyed.
Reno, Nev.—Twenty dwellings destroyed in forest fires at Donner Lake Ridge, Foresthill and north San Juan.
Dover, N. H.—Robinson Bros., Inc., tonic plant damaged.
Avon, N. J.—Seaview Electrical Co. damaged.
Edison, N. J.—Two tractor-trailers and a small gasoline truck at Eastern Express, Inc. Terminal destroyed.
Millville, N. J.—Millville Airport building, housing Lund Aviation Corp. of New York, destroyed.
Neptune City, N. J.—Seven stores in shopping center destroyed and another damaged.
Newark, N. J.—William Shell, Inc., electrotyping equipment plant considerably damaged.
Pennsauken, N. J.—Ruttenberg Furniture Co. store in old Central Airport badly damaged.
South Orange, N. J.—Hoffman's Pharmacy damaged.
Springfield, N. J.—Safeway Supermarket destroyed.
Union City, N. J.—Electrical Engineers, Inc. plant and apartment destroyed; dwelling at 308 17th Street damaged.
Union City, N. J.—Three-story apartment dwelling housing Russ Giardino's grocery store, badly damaged.
Buffalo, N. Y.—Building 315, National Aniline Division of Allied Chemical and Dye Corp., destroyed. Explosion.
Clayton, N. Y.—Frink Sno-Plow Inc. damaged.
Dornsboro, N. Y.—Grange League Federation's service feed store and warehouse destroyed. Overheated feed bin.
Elmira, N. Y.—Nathan Silverman's clothing store destroyed; apartments damaged. Defective wiring.
Freeport, L. I., N. Y.—Sonic Recording Corp. damaged.
Loch Sheldrake, N. Y.—Freida Hotel destroyed.
Malone, N. Y.—St. Joseph's Roman Catholic Academy gymnasium damaged.
Marathon, N. Y.—Barn and silo on Grayson Smith farm destroyed.
North Creek, N. Y.—North Creek Lumber Mill damaged.
West Glens Falls, N. Y.—Upstate Motel Furniture Co., Inc. damaged. Faulty sign transformer.
Hickory, N. C.—Hickory Bench Co. damaged. Soft drink box motor.
Jonesville, N. C.—Winston Rd. Furniture Store destroyed.
Maxton, N. C.—Maxton Oil and Fertilizer Co. warehouses destroyed.
Statesville, N. C.—Storage shed on J. E. Stevenson property destroyed. Battery short circuit.
Winston-Salem, N. C.—Building housing Glamor Beauty Shop, Smith's Beauty Shop and apartments, heavily damaged.
Fargo, N. D.—Farm & Home Lumber Co. destroyed.
Chesterland, Ohio—Horse barn owned by Hawken School for Boys destroyed. Lightning.
Cleveland, Ohio—Building housing Theatrical Grill damaged.
Defiance, Ohio—Knisely Gas & Appliance Corp. damaged.
Wooster, Ohio—Young's IGA Foodliner damaged.
Bonanza, Ore.—Lloyd Gift Elevator destroyed. Engine exploded.
Lakeview, Ore.—Williams Commodity Granary Pellet Mill damaged. Faulty electric motor.
Mist, Ore.—Neil Sawmill destroyed.
Portland, Ore.—General Construction Co's. steam derrick barge damaged. Faulty boiler.
Portland, Ore.—Herbert R. Norris' Ho Ti Supper Club damaged.

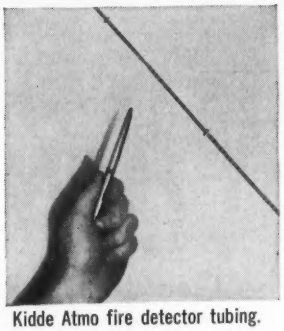
St. Paul, Ore.—A. J. Ray's five hop kilns destroyed. Faulty wiring.
Salem, Ore.—Hoover Elementary School destroyed.
West Linn, Ore.—Western Transportation barge destroyed; Crown Willamette Paper Co. warehouse damaged. Chemical explosion.
California, Pa.—Four-story Arlington Hotel damaged.
Lansford, Pa.—Lansford Record newspaper building destroyed; adjoining business-apartment building damaged.
Logan, Pa.—Two box car repair shops of Pennsylvania Railroad destroyed.
Philadelphia, Pa.—Basket warehouse of M. Brown Co. destroyed.
Philadelphia, Pa.—Dinette Craft Mfg. Co. heavily damaged.
Philadelphia, Pa.—Sixteen fuel oil tanks destroyed and four other tanks badly damaged at Gulf Oil Corp. Refinery. Lightning.
Tamaqua, Pa.—Reynolds experimental laboratories building of Atlas Powder Co. damaged. Explosion.
Providence, R. I.—Sears, Roebuck Co. store damaged.
Kingstree, S. C.—Storage shed destroyed.
Union, S. C.—Begley's Paint & Sporting Goods Store damaged.
Crossville, Tenn.—Cumberland Homestead Baptist Church destroyed.
Eagleville, Tenn.—Abandoned hotel destroyed; building housing Redmond's Restaurant and Milton Puckett's grocery store, damaged.
Nashville, Tenn.—Fine Arts Building at Belmont College damaged. Lightning.
Nashville, Tenn.—Suburban Bordeau Elementary School destroyed.
Dallas, Tex.—Texas Pillow Co. and adjacent Ashton Valve Co. and Crosby Valve & Gage Co., damaged.
Fort Worth, Tex.—Warehouse housing Paul Iobe Inc. furniture mfrs. destroyed.
Houston, Tex.—Ten cabins of 75-unit motel damaged.
Newport, Vt.—W. H. Lillicrap Garage damaged.
Fairfax, Va.—Historic Ash Grove Mansion virtually destroyed.
Harrisonburg, Va.—The Bargain Place, a department store and a sandwich shop, destroyed; half-dozen other business places and apartments damaged.
Richmond, Va.—Hofheimer's Shoe Store damaged.
Ephrata, Wash.—Kobata Potato Warehouse destroyed.
Spokane, Wash.—Northern Paper Stock Co. warehouse destroyed. Arson reported.
Spokane, Wash.—Victoria Hotel damaged. Cigarette.
Franksville, Wis.—Barn owned by B. J. Jensen destroyed.
Milwaukee, Wis.—Auer Court Apartments damaged.
Letellier, Man.—Manitoba Pool Elevators elevator and two annexes destroyed. □□

Reduction for New York Schools and Churches

Reductions amounting to more than $1 million a year in fire insurance rates for certain office and institutional properties such as hospitals, churches and schools in New York State were announced recently by the New York Fire Insurance Rating Organization. The rating organization also announced a number of changes in rules and forms which have been approved by the New York State Insurance Department. The reduction in rates was made possible by the favorable experience for the affected classes in the years 1954-1958.

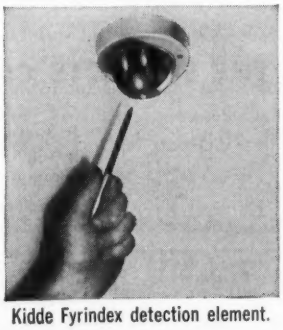
It is estimated that the revisions will result in an annual premium reduction amounting to $448,793 in New York City and an estimated annual reduction of $589,921 throughout the remainder of the state. No rate increases were announced in any of the 115 occupancy classes.

FOR LOW-COST, DEPENDABLE FIRE DETECTION-ALARM!



Kidde Atmo fire detector tubing.

KIDDE ATMO: Ideal for schools, hospitals, plants, public buildings, Kidde Atmo Fire Detecting and Alarm Systems use highly sensitive rate-of-temperature-rise detection tubing. Easy to install, simple to maintain, Atmo systems give fast warning in first stages of fire.



Kidde Fyrindex detection element.

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CITY_____ ZONE_____ STATE_____

THE ROUND TABLE

Continued from page 963

each year. The fire prevention inspections require notices to be served on the proper authority for the correction of any defects found. Schools are treated in the same manner as any other occupancy qualifying for mandatory inspections.

There is no provision for the mandatory installation of automatic sprinklers or automatic fire detectors in school buildings. However, a program is in progress for the installation of sprinklers in the stairways of schools, and automatic fire detectors in classrooms.

School fire alarm systems are not connected directly to fire alarm headquarters.

Smoking is prohibited in school buildings, except in safe areas designated by an authorized person, and with the approval of the fire department. Generally, smoking is permitted in teachers lounge rooms and rest rooms.

State law provides for a course of study in fire prevention for use in the public schools, dealing with the protection of lives and property against loss or damage as a result of preventable fires. Each public school teacher is required to devote not less than 30 minutes each month to teaching her pupils fire prevention.

A program of training for school janitorial personnel is conducted, covering the use of fire extinguishers, etc.

The subject matter for instruction of pupils is developed by the State Industrial Commission.

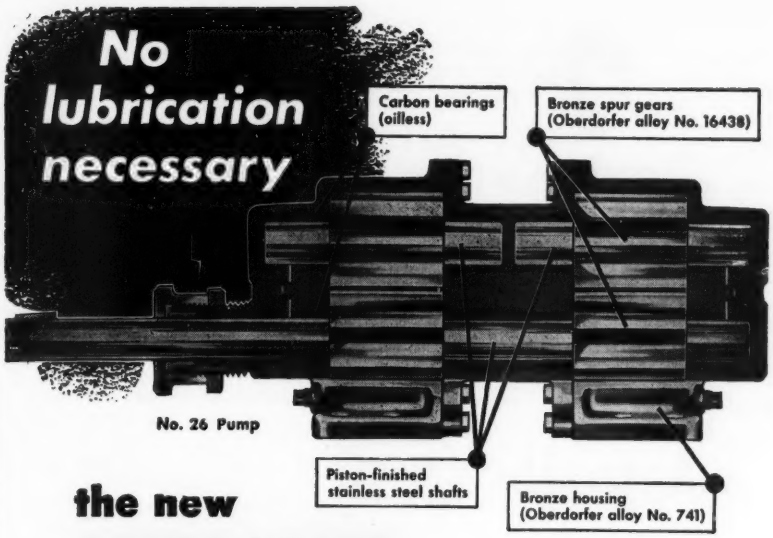
George Burns, Chief, Anchorage, Alaska: We make regular school inspections throughout the year, but a detailed inspection is conducted once a year, with a report of the inspection submitted to the school board. We have the legal right to enter the property, but there is no need to exercise it as these institutions welcome our inspections. When recommendations are made, the corrections are accomplished immediately unless it requires review as a new budget item.

Practically all new schools have a partial sprinkler system and automatic fire detectors. This has been a long fight for us but we have made tremendous progress in this direction within the past few years. The classrooms are not sprinklered but the main corridors and hazardous areas are.

We have not demanded a direct connection to fire department headquarters in the past, but we have suggested it. It is our plan to make such a requirement in the near future and then all existing systems will be connected.

The Anchorage Independent School District has schools that are located within and outside the city limits. We do not allow smoking anywhere within the city schools, but the school district allows smoking in lounge areas of the schools that are outside our jurisdiction.

Teachers receive fire prevention education by conference, classroom visits and special study classes. The janitorial people are assembled twice a year for the express purpose of discussing fire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The No. 13 and No. 26 Oberdorfer Pumps are more fool-proof than they have ever been. When you get to a fire you have something you can count on. It isn't necessary to wear pumps out checking them periodically to see if they will work. These pumps are metering pumps in principle and therefore must produce the same volume for every revolution of the drive shaft.

PERFORMANCE DATA—No. 26 and No. 13 PUMPS

Pump No.	Pump Shaft R.P.M.	Pounds Pressure	Hose Length and Size	Dry Suction Lift in Feet	Vol. in Gal. Per Minute
26	1600	120	500'—1½"	20'	150
13	1600	120	500'—1½"	20'	75

LIST PRICES —No. 26—$249.50 No. 13—$122.50

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prevention within the school district. This entails fire prevention rules, use of fire extinguishers, fire procedures and a descriptive film.

Howard Blanton, Chief, Fort Wayne, Ind.: We do regularly schedule public and private school fire prevention inspections and have legal authority to inspect these schools and order violations corrected.

We do not require automatic sprinklers or automatic fire detectors in school buildings.

We do not require that school fire alarm systems be connected directly to fire alarm headquarters. However, we do have nine of our 45 schools connected and it is part of the program that I am presently working on to have the remainder of the schools connected to our system.

We do permit smoking in teachers' lounge rooms and similar rest rooms, providing they are seated and ash trays are available.

As yet, we do not have a program for instructing teachers and school janitorial help in the rudiments of fire prevention. However, before the year is entirely over, we hope to have our system in operation.

Dan C. Hicks, Fire Marshal, Nashville, Tenn.: We inspect public and private schools regularly. We are given legal authority to inspect these schools and order violations corrected.

We require automatic fire detectors in school buildings.

The school fire alarm systems are not connected directly to fire alarm headquarters.

We permit smoking in teachers' lounge rooms and rest rooms.

A seven page brochure entitled "Things to Remember in School Fire Protection," compiled by the chief and the fire marshal of the Nashville Fire Department, from information obtained from the NFPA, is sent to each school. It gives such information as: The causes of fire, how fires kill children, some causes of human failure, the necessity for organized response, keeping a safe house, the drill and the perils outside and afterwards.

William J. Cook, Chief, Shreveport, La.: Complete inspections are made twice annually. Brief inspections are also given during unannounced fire drills held during the month. We have legal authority to inspect the schools and order violations corrected.

Automatic sprinklers or fire detectors are not required by our department.

We require in some schools that fire alarm systems be connected directly to fire alarm headquarters.

We allow smoking where ample ash trays are provided and an approved area is designated.

Our fire prevention activities are carried into the schools in the form of fire prevention programs and counseling janitorial help in the course of fire inspections. Also, the use of the various types of fire extinguishers are demonstrated and explained. □□

?

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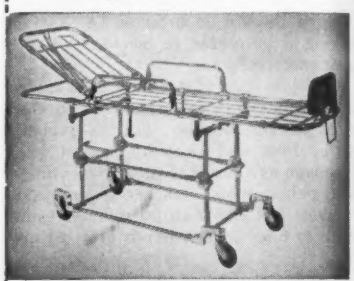

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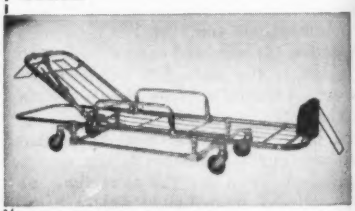

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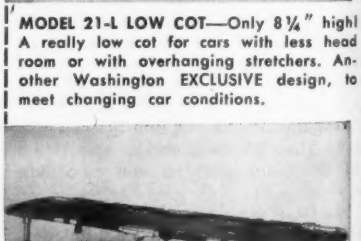

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Obituaries

W. J. Scott, O.B.E., Q.C.

William J. Scott, 60, fire marshal of the Province of Ontario, Canada, for the past 25 years and chairman, Emergency Measures Organization, the civil defense agency of the Province, died suddenly on September 11. He had been attending a meeting of the board of directors of the International Association of Fire Chiefs at Rochester, N. Y., when he was taken ill. While being driven to his home in Toronto, he suffered a fatal heart attack.

A lawyer by profession, his legal training gave him a keen insight into many of the problems facing the fire service and he was the author of many texts and pamphlets on fire and civil defense topics, as well as being a visiting professor in public administration at the University of Southern California. He founded North America's first resident college for fire fighters at Gravenhurst, Ont., and was a trustee of the International Fire Administration Institute. During World War II, he was decorated by King George VI with the rank of officer, Order of the British Empire, for his civil defense activities in Canada and Great Britain.

A director of the International Association of Fire Chiefs and Canadian Association of Fire Chiefs, he was past president of the Association of Canadian Fire Marshals, director of the National Fire Protection Association in 1940-42 and past chairman of the NFPA Fire Marshals section. He is survived by his widow, two children and two grandchildren.

Vincent J. McLaughlin

Dr. Vincent J. McLaughlin, 46, honorary battalion chief, FDNY, psychologist and educator, died at his home in the Bronx, N. Y., on September 18th. He received his degrees, including Ph.D. from Fordham University and was a member of the faculty of Fordham, New York University, Hunter College, Xavier Institute and Delehanty Institute as a lecturer.

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He was also supervisor of psychologists for the U. S. Navy Office in New York and lecturer and consultant to the Fire College, New York Fire Department.

He was the author of many articles and treatises on his specialties, and conducted classes to prepare firemen for officer promotion examinations. His article on the trend of civil service promotion examination questions in the July 1959 issue of FIRE ENGINEERING provoked great interest in the field.

John J. Coughlin

John J. Coughlin, 46, chief dispatcher, Rochester, N. Y., Fire Bureau, died August 19 following a heart attack at his home. He was appointed to the bureau as a dispatcher in 1935 and named chief dispatcher in 1950.

He authored the article describing Rochester's new dispatching center which appeared in the August issue of FIRE ENGINEERING. Many of his ideas were incorporated in the center which was of great interest to a large number of fire chiefs attending the recent IAFC conference in that city.

He was an honorary member of the Monroe County, N. Y., Fire Chiefs Association, the Monroe County Fire District Officers' Association and ex-officio member of the Monroe County Fire Advisory Board.

Chief Fred Carlson

Chief Fred Carlson, 68, for many years head of the Kingsburg, Calif., Fire Department, died July 12.

Roi B. Woolley

Chief John J. Nelligan

Fire Chief John J. Nelligan of the Bangor, Me., Fire Department, died at his home after a short illness on June 27. He had been a fire fighter for more than 33 years.

He was appointed to the department as a private on June 20, 1927, and promoted to captain three years later. He was appointed assistant chief in April 1933, and advanced to chief of the department on September 22, 1949.

Chief Nelligan was a former president of the Maine Fire Chiefs Association and a member of the International Association of Fire Chiefs. □□

Manual on Ammonium Nitrate Properties

The Manufacturing Chemists Association, Inc., has published a 24-page summary of the properties and recommended methods for packaging, handling, transportation, storage and use of fertilizer grade ammonium nitrate. The manual, A-10, is available from the association which is located at 1825 Connecticut Avenue, N. W., Washington D. C., at 50 cents a copy.

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Coming Events

Oct. 20-23—Nebraska State Firemen's Association. Annual meeting, Chadron, Neb. For information, write Chadron Fire Department.

Oct. 31-Nov. 2—Illinois Firemen's Association. Annual meeting, Springfield, Ill. Secretary, R. W. Alsip, Box 8, Champaign, Ill.

Nov. 3-5—International Rescue and First Aid Association. Annual meeting, Benjamin Franklin Hotel, Philadelphia, Pa. For further information, contact the Executive Office, 314 King Street, Alexandria, Va. □□

FIRE COLLEGES

Arizona State Fire School—Oct. 20-22, Phoenix, Ariz. For information write Chief Jake Siken, Supervisor of Training, Phoenix Fire Department.

Indiana Fire Training Program—Oct. 25-27, Fire Inspectors Course. All courses will be held at Purdue University, Lafayette. For information, write Professor Shelby Gallien, Director, Public Safety Institute, Purdue University, Lafayette, Ind.

New York State Fire Instructors Conference—Oct. 23-28, Elmira, N. Y. Regional Fire Administrators Conference—Oct. 26-28, Elmira. For information, write George H. Proper, Jr., Acting Director, Division of Fire Safety, Office for Local Government, 155 Washington Avenue, Albany 10, N. Y.

Michigan Industrial Fire Control Seminar—Nov. 1-2, University of Michigan, Ann Arbor. For information, write Francis Hartman, Supervisor, Firemanship Training Program, The University of Michigan Extension Service, 1820 Beal Avenue, North Campus, Ann Arbor.

Ontario Fire College—Oct, 24-28, Mutual Fire Aid Forum—County Fire Coordinators. All courses will be held at the Ontario Fire College at Gravenhurst, Ont. For information, write Fire Marshal's office, Province of Ontario, 210 Huron Street, Toronto 5.

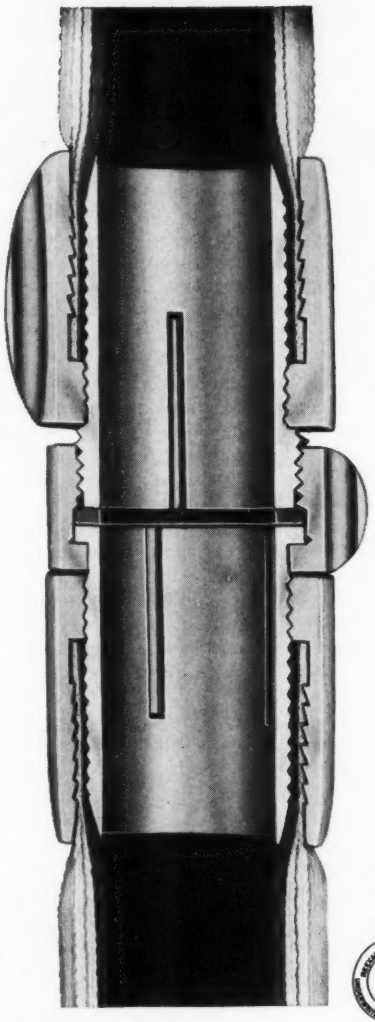
Pennsylvania State Firemen's Training School— Oct. 31-Nov. 4, Advanced Fire Fighting; Nov. 14-18, Fire Department Pump School. All courses to be held at the State Training School, Lewistown, Pa. For information contact Art Espey, Director, Box 631, Lewistown.

North Carolina Fire College and Pump School —Oct. 17-19, Firemen's School Building and Training Grounds, 2601 East Seventh Street, Charlotte, N. C. For information, write Chief Charles L. Burkett, Director-Conductor, c/o Salisbury Fire Department.

South Carolina Firefighters Training Program— Oct. 24-28, Belton; Oct. 31-Nov. 4, Hampton; Nov. 7-11, Bowman; Nov. 14-18, Williamston; Nov. 28-Dec. 2, Gantt Water District, Greenville; Dec. 5-9, Clinton; Dec. 12-16, Winnsboro; Dec. 19-23, Wade Hampton (Greenville); Jan. 2-5, Summerville; Jan. 9-13, Cayce; Jan. 16-20, Darlington; Jan. 23-27, Maulden. For information, write H. B. Wells, Instructor, "Shady Springs," Route 1, Box 119, Prosperity.

Southwest Arson Investigation Institute—Nov. 8-12, University of Oklahoma, Norman, Okla. For information, write James Robinson, Coordinator, Public Administration and Law Enforcement Services, University of Oklahoma, Norman.

Tri-State Fire School—Nov. 15-18, **Instructors School for Company Officers,** Huntington, West Va. For information, write R. M. Myers, Secretary-Treasurer, Tri-State Fire School Association, 816 North Street, Huntington. □□



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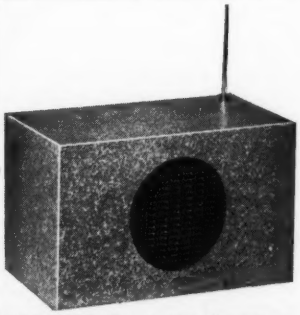

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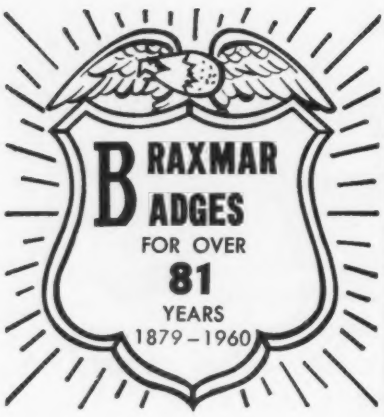

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ROCHESTER IAFC CONFERENCE

Continued from page 947

Lewis E. Berry, assistant director of the Office of Civil and Defense Mobilization, warned the chiefs that the fire service must be prepared at all times for hostile attack. "You will be the men who will carry out the fire defense programs and you may well be the most important unit of local government on such an occasion," he said.

In his progress report to the chiefs, the OCDM official declared that it was clear the Soviets intend to use nuclear blackmail to promote their objective. "They have used these tactics in the past and will continue to use them in the future," he said. "Without effective civil defense and defense mobilization and without adequate fallout protection for all our people, it will be most difficult for us to resist either nuclear blackmail or nibbling aggression."

He said that considerable progress has been made in the nation's fire defense as the result of assistance and cooperation which the fire service has so generously contributed. "In the light of present international conditions, I think you will agree that this progress must be accelerated," Mr. Berry concluded.

National Board represented

Everett W. Fowler, chief engineer of the National Board of Fire Underwriters, in a talk to the chiefs on Wednesday morning, compared fire protection to a savings account. "When a city pays out money for maintaining or improving municipal fire protection, the city is investing money in an enterprise with anticipation of receiving regular returns in benefits to the people of the city," he said.

Mr. Fowler expressed the National Board's full confidence in the IAFC. He also cited Rochester as an example of effective effort on the part of a municipal administration to improve and reach a higher standard of municipal fire protection. Briefly he described the National Board's grading schedule and how it is applied.

He told the chiefs that a recent article in a general magazine inferred that the improvement in the National Board's classification of Oak Park, Mich., was the result of integration.

"You may be interested to know," he said, "that the improvement in classification of Oak Park was actually due to an over-all improvement in fire protection facilities of the municipality, especially in the water supply, and that the combination of fire and police departments was not a significant factor in this over-all improvement. The

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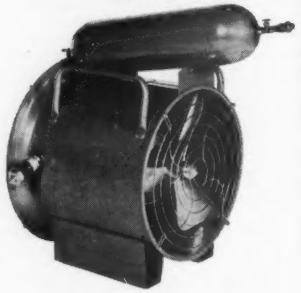

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National Board's report of November, 1959, on Oak Park contained the following paragraph in its conclusions:

Integration inadequate

"The department, composed of public safety officers with combined police and fire duties, does not provide adequate fire protection to the city. Some activities and methods, which are accepted as good practice in most recognized fire departments, have been restricted or eliminated in Oak Park in an effort to develop an efficient police force."

The IAFC membership confirmed the nominating committee's recommendations for officers. A run-off was required for the second vice president post.

The new officers are: Chief William J. Taylor of Burbank, Calif., president; Chief Edward F. Deignan of Elizabeth, N. J., first vice president; and Chief Lewis A. Marshall of Providence, R. I., second vice president. Renamed and re-elected were: Chief G. A. Mitchell of Opelika, Ala., treasurer, and B. Richter Townsend of Hartsdale, N. Y., executive director.

After the Wednesday morning session, buses transported the members and their guests to the Rochester Fire Academy where luncheon was served. Following this the Rochester and Monroe County fire departments put on a demonstration of fire fighting techniques and more than a dozen exhibitors then demonstrated their products to the large throng of spectators.

Banquet a sell-out

The committee had printed 1,000 tickets for the banquet on Wednesday evening in the belief that this number would be more than adequate. However, by Wednesday morning all tickets had been sold and it was necessary to improvise tickets at the door to supply the demand.

The Conference closed after a brief business session on Thursday morning, September 15, at which all officers were sworn in, committee reports were accepted and resolutions adopted. □□

HELICOPTERS

Continued from page 950

ments which have aided our progress in developing both the brush and structural programs."

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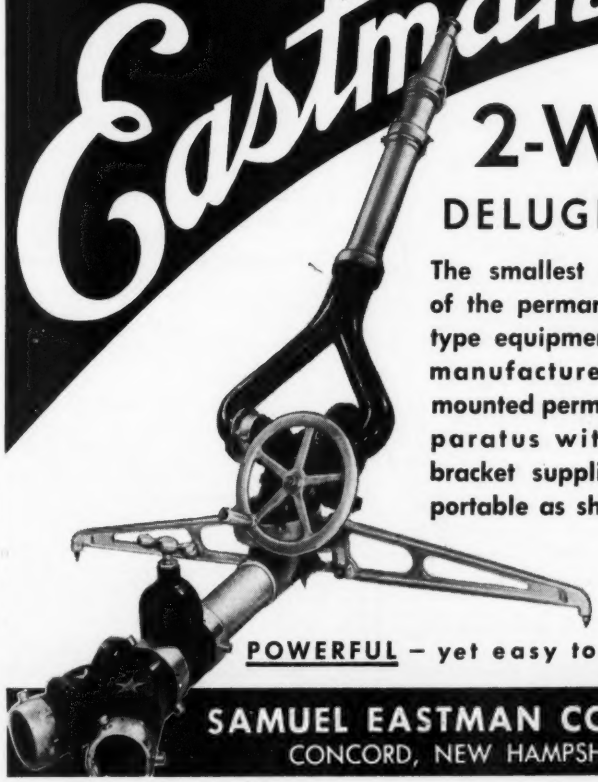

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ter tender truck, with equipment needed to maintain the aircraft in the field, is ready to move into action at any time.

"I think the day will come," Klinger said, "when large fire departments may have an aerial division with helicopters automatically ordered to respond to major fires."

The chief knows helicopters have limitations and that many hard years of test, trial, error and probable disappointment lie ahead before the aircraft will become a standard piece of equipment in American fire departments.

"Many of the suggestions which I have presented may sound a bit Buck Rogerish, but I feel that they have definite possibilities and should be carefully considered. Of course, some of the suggestions deal with major disaster operations, but many could be used to aid a department's multiple attack on structural fires."

Possible Helicopter Operations — Structural

I. Rescue
- A. Fire
  - 1. Roof evacuations
    - a. Direct pick-ups, ladder, slings, etc.
    - b. Delivery of personnel slides
    - c. Delivery of telescoping walkways to adjoining roofs
  - 2. Window evacuations
    - a. Firing device to shoot slide equipment into windows containing trapped persons
  - 3. Aerial crash equipment
    - a. Airports
    - b. Vehicle fires and wrecks on clogged streets, freeways, etc.
- B. Disaster area, flood, fire, quake, bombing

II. Transportation
- A. Fire
  - 1. Material
    - a. Large and small pumper units with crew to critical locations
    - b. Supporting material to remote units
      - 1. Units transported behind fire front by 'copters
  - 1. Air ambulance
  - 2. Water
    - a. Multi-patient litter pads (detachable) — S60 flying crane
    - b. Portable aid stations and operating rooms with staff.
    - a. Supply water to pumpers in event of no local water supply
    - b. Laying hose lines to fire
    - c. Laying additional 6-inch

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   a. Large bulk drops of retardants
   b. Launch and guide retardant missiles
   c. Flying tankers and pumpers to attack fire directly
   d. Flying nozzle platform (equipment with hose reel so line can be lowered to pump from ground supply of retardants—attack fire at upper levels of large structure)
   e. Smothering agents and devices
      1. Chemicals
      2. Dust
      3. Asbestos blanket type (dropped over)
      4. Mists and sprays

B. Disaster areas, flood, fire, quake, bombing
   1. Material
      a. Clear debris from main thoroughfares
      b. Supply emergency aid and equipment to any community or location
      c. Evacuation of casualties
      d. Radiation surveys to determine safe area for entry
      e. Advise ground units routes open to scene
      f. Direct ground traffic
   2. Water
      a. Supply fresh water to stricken area by laying mains and tanks into area
      b. Spot and transport repair crews to critical breaks in source of water supply

III. Communications

A. Fire
   1. Control of equipment on the fire
   2. Reconnaissance
   3. Spotting trouble spots
   4. Restoring service
      a. Setting poles and towers
      b. Stringing lines pole to pole
      c. Laying emergency phone lines on ground
   5. Direct evacuation from air
   6. Aerial TV camera ship to shoot over-all picture to central control point
   7. Aerial relay station (radio-microwave)

B. Disaster area, flood, quake, bombing
   1. Any of the above could be used for any emergency
   2. Laying hose line over rubble, dropping portable pumps and manpower in areas inaccessible to heavy equipment. □□

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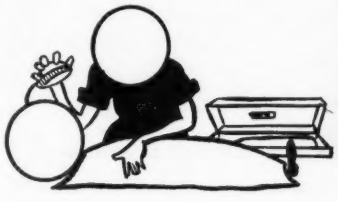

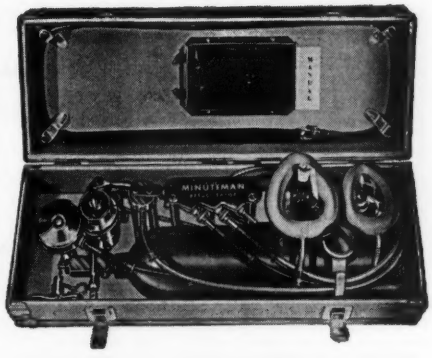

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STAY ON THE RIG!

Continued from page 953

of the chief, who has given permission to quote him. The letter went: "On Monday, April 23rd, while responding to an alarm, my car collided with another at an intersection in the western part of Davenport. I crashed head-on with a telephone pole, snapping it off. The right front of the car then struck a tree 3 feet in diameter. I was able to jump from this car and assist in directing the emergency. I want to thank your publication and other fire service publications for this fact. I was uninjured though badly shaken. Sixty days ago, after reading several articles relating to the installation of safety belts on fire apparatus, we made such installations on every unit in our department. There is little doubt in my mind that I would have been unable to write this letter as a result of serious injury or death, had my car not been equipped with safety belts. I should like to urge every fire chief, charged with the responsibility of protecting his personnel, to consider seriously the installation of safety belts on all fire apparatus. I thank God that I made such a decision."

No delay in response

When I requested permission from Chief Schick to quote the above remarks, he not only granted my request but supplied the following supplement: "On September 22, 1959, while responding to an alarm during a driving rainstorm, Engine Company 1 of this department was involved in an accident. While turning a corner on blacktop paving they slid into a high curbing, jumped the curb, and struck a telephone pole head-on. Approximately $1,000 damage was incurred to the front of the unit. The pole snapped off and fell across the windshield and came to rest between the driver and officer in the front seat. Neither of these men, or the plugman on the rear, was injured or even bruised in this accident. I am firmly convinced the seat belts prevented the men in the seat from pitching into the steering wheel or windshield. Our personnel are ordered to fasten seat belts before the unit moves from the station. I don't feel there is any time lost in response, or in getting into action at the scene of the emergency. We had the usual complaints from members that follow any change of established routine, but after a comparatively short period of time, the use of belts was accepted."

In an attempt to accumulate some data on fire service traffic accidents, I reviewed my files of FIRE ENGINEERING

for the 10 years from January 1, 1949 to January 1, 1959, and found accounts of 34 traffic accidents which killed 33 firemen and injured 91. This represents a very high fatality rate, an average of almost one death per wreck, and reflects the very serious nature of these accidents. I am certain these accidents represents only a small portion of all that occurred in the 10-year period. These got into print either because they were spectacular or unusually lethal, or because that department had an ambitious report and thereby ready access to the pages of the fire journals. All too often, an accident involved a meeting of two fire trucks at an intersection. In these cases, it is probably that the siren on each rig involved masked the scream of the siren of the other. The accounts of these wrecks all too often state that all men were thrown to the pavement, and some were killed when they struck the pavement or a utility pole, or were crushed by their own or another truck. These stories support the conclusion of the Cornell studies that users of belts had 85 per cent less chance of sustaining dangerous or fatal injuries than non-users of belts who were thrown out of the crashed car. From pictures included with these accounts of wrecks, the fire truck often was not demolished and yet men died. Most of these deaths could have been avoided if the victims had been anchored in their positions—on seats, or on the tailboard.

To be concluded

LUMBER PLANT CONFLAGRATION

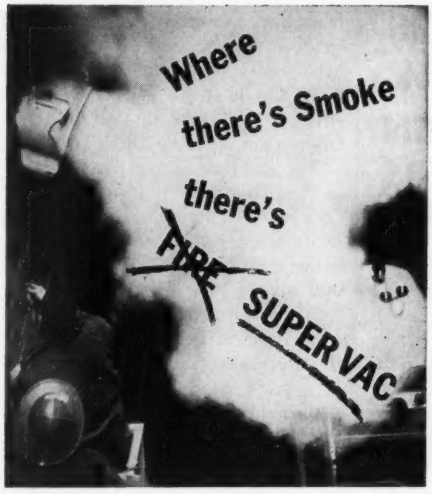
Continued from page 955

load in the plant burned. At many points, a yellow-white flame was clearly visible.

Spot fires several blocks distant, caused by flying brands, were extinguished by station fire crews. Citizens also reported ash deposits 6 or 7 miles down-wind from the scene.

Maximum water available in the mains in the vicinity was utilized, there being four heavy deluge sets in operation and thirty 2½-inch hand lines. It was impossible to lay more lines, as the mains were taxed to capacity and the water department stepped the pressure up to give us maximum flow.

The fire was a terrifying sight. Flames were leaping hundreds of feet into the air and the fire was jumping 50 to 60 feet at a time. Whole buildings became involved practically instantaneously. The heat was extreme. Ten men were sent to the hospital



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from heat prostration and many were treated on the scene with oxygen. Men were lying around by the dozens from the heat. It had a weakening effect as it seemed to sear the energy from them, leaving them prostrated.

The fire load was extremely heavy, as the plant covered approximately 14 acres alone, and included over 4 acres of buildings. The rest of the area covered lumber piles containing 4,500,000 board feet of lumber.

A combination of conditions and events seems to have contributed to the unusual spread of this fire. Owing to market conditions, the mill yard had a heavier than usual stock of stacked lumber which not only aided in the rapid spread of the fire, but also reduced accessibility for the fire crews. Tinder dry buildings exposed to the sawmill soon burst into flame, and in no time had spread to adjoining properties.

In pitting the efforts of the fire department against a fire of these proportions, as one captain put it, "it made him feel small and puny," although the firemen fought a gallant battle and one of which they can be proud. At times the deluge and hose streams appeared to have no effect whatsoever.

The fire was contained at 8:45 p.m. However, the "off shift" logged 10 hours extra duty time; 45 men were not released from the scene until 4 p.m. the next day.

Conclusions

Investigation shows that employees using an acetylene torch to rebabbit a bearing had completed their work around 2 p.m. Although they stated that the area had been thoroughly wet down prior to commencement of the babbiting operation, it is evident that sparks must have reached and ignited the under portions of the mill. This area can only be seen from the marine side and the fire must have spread for a considerable distance in the hidden areas before flame and smoke became visible. This resulted in delayed discovery of the fire.

It is the opinion of the fire department and the Provincial Fire Marshal's office investigation teams, that this open space under the mill must have been fully involved before discovery and the arrival of the first-in fire crews.

Great praise must be given to the fire crews for their persistent fortitude shown during the height of this fire. Without a doubt, it was only by sheer courage and grim determination that we were able to keep potential disaster to a minimum. □□

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SUBWAY FIRES

Continued from page 957

gency exit. It will be an arduous experience for the normal, healthy person and an impossibility for anyone who is frail, old or incapacitated in any manner. Where this method has to be used, it is necessary to have a large number of trained personnel at hand to guide and assist the passengers over the difficult spots.

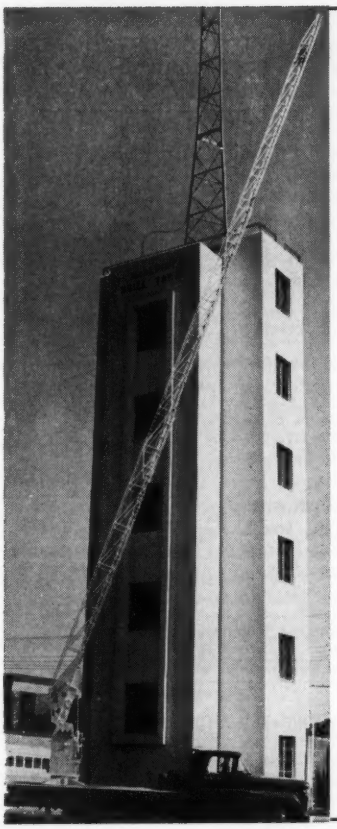
The greatest danger in such cases is that of panic, fear of the unknown and darkness, of the irritating smoke and electrocution. Once started, panic will spread like wildfire, hence it must be controlled at the outset. Emergency lighting, the presence of uniformed firemen and the use of voice amplification devices will do much to reassure and control the passengers. The presence of sufficient manpower and equipment, emergency lighting, medical help such as the disaster unit and a sufficient number of ambulances rescue and squad companies with resuscitators and inhalators is vital.

Problems and the actions taken in connection with the subject fires will be considered here in as chronological an order of occurrence as possible. For purposes of brevity, one will be referred to as the "escalator" fire, the other as the "debris" fire.

Not the least of the problems is decision-making which can be extremely difficult at subway fires. It is a well-known fact that the first step in this process which all commanding officers, consciously or unconsciously, go through is to define the problem. In a normal operation, this is comparatively simplified because the fire is above ground and much of the information required is more readily available by visual observation and by communications to and from officers assigned to various points or areas. At subway fires, however, decision-making is complicated by the potential life hazard, by the fact that less can be gleaned from visual information and required information is slower in forthcoming.

Establishment of a field headquarters is a particularly urgent matter at a critical subway fire. Purposeful order assumes a greater than usual importance and can be symbolized by the manner in which a command post is set up and maintained. Here the commanding officer is located and he assigns personnel and units, receives information, decides upon objectives, specifies procedures to be used, and provides for the coordination of all activities and personnel.

From the experience gained at both recent fires, it can be said that the in-



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formation required by the commanding officer for making decisions inevitably comes from officers specifically assigned to check and report on particular items or areas. Chief officers are preferable for these assignments because of the deference accorded them. Information from other sources (subway employees and civilians) was actually misleading in some ways. At the escalator fire, some of the subway workers gave wrong information about what was burning and were uncertain about the location of three trapped co-workers.

This was unintentional on their part, of course, since it is probable that these men were suffering from shock after having had a close call themselves. At the debris fire, subway employees who did know where the fire was could not be contacted. Getting the desired information then is a "do it yourself" proposition. Some civilians are capable of giving intelligent and accurate information, but it is difficult for the field officer to properly evaluate the information given by someone who is a total stranger; also, information given about a situation as it existed 10 minutes prior may not apply at the time of telling, regardless of its accuracy.

In selecting the procedure to be used, the commanding officer does have something to go on. There may be some helpful information given on the phone as the alarm is received, on the radio while responding to the scene, or on arrival at the scene while contacting the officer in command prior to that time. In all probability, however, the commander may have to be guided, to a large degree, particularly in the initial steps of the opera-

tion, by his own sense perceptions: Sight, touch, hearing and, possibly, smell. There are reasonable deductions that can be gleaned from visual observation of smoke emanating from exits or gratings. At the escalator fire, the smoke issuing from the exits at 41st Street and Broadway practically pinpointed the location of the fire beneath. The sense of touch clearly indicated a very hot fire. At the debris fire, the sense of smell revealed that insulation might be involved.

It might truly be said that a sixth sense would be most helpful in dealing with information received at such situations inasmuch as quickly made and correct decisions are highly desirable, but hasty and incorrect decisions can be disastrous. There is no alternative but to check and this point cannot be stressed too strongly.

At subway fires of some types, it may only be necessary to assign a battalion chief accompanied by a ladder company to enter the subway and approach the fire area from each side to ascertain the level of the blaze and the best way to advance lines and extinguish it. In selecting this best way, consideration should be given to the direction of any prevailing draft due to a mechanical vent, train movement, etc. (if only one track is affected, trains may be running on others).

This, in essence, was the procedure followed at the escalator fire with the exception that four sides had to be checked in the area because of the complex subway arrangement in that particular location.

Fire fighting

Battalion Chief Francis W. Voosen of the Eighth Battalion was assigned to advance into the subway entrance at 40th Street and 7th Avenue, and Battalion Chief Hubert J. Gormley of the Ninth Battalion into the entrance at 41st Street and 7th Avenue—one block west of the two entrances at 41st Street and Broadway from which the very hot smoke was pushing with considerable force. Shortly thereafter word was received from subway employees that three of their co-workers were trapped. Within a matter of minutes, information that Fireman Robert E. Farrell of Ladder 4 had led the three men to safety by an outstanding feat of initiative and courage was corroborated. Also within a matter of minutes, Battalion Chief Gormley reported the location of the fire and the best way to attack it. Then, and only then, could the problem be defined. In chronological order of discovery the problem consisted of: (1) An exposure hazard to each of the tall business buildings adjacent to the stairway at 41st Street and Broadway from which intense heat, smoke and gases were issuing; (2) an acute life hazard for three subway workers; (3) the always prevalent life hazard for passengers, and (4) a fully involved 60-foot-long wooden escalator.

Exposure promptly covered

The exposure hazard was covered promptly by the use of a fog stream at each of the entrances at 41st Street and Broadway. It was impossible to advance down these stairs due to the heat. On arrival, damage to the exposures was confined to one cracked plate glass window.

Covering the usually prevalent life hazard entailed the following:

1. Assigning ladder companies and rescue companies to nearby Times Square station to check on conditions and assist in removal of passengers where necessary. The transit police assigned to this station were helpful in this work.

2. Requesting the transit authorities to shut down power so that trains would not enter the area and continue to discharge passengers at smoke-affected stations.

3. Requesting the police department to establish fire lines and prevent people from entering the subway at this point.

4. Stretching lines to extinguish the fire.

5. Notifying the transit authorities of the danger caused by the spalling of the walls and ceilings.

The fire in the escalator was put out by two 2½-inch lines. Both lines were directed at the base of the involved escalator first. Then one line was advanced upward on the framework of the escalator. The second line moved up and operated from a ramp that paralleled the escalator at a distance of about 25 feet. Combination fog and solid streams were used. High temperatures were developed at this fire and fortunately a ready outlet for the large volume of hot smoke was provided at 41st Street and Broadway.

As frequently happens at subway fires, the lines required were long and more than the usual manpower was needed. This, combined with other problems mentioned, made mandatory the transmission of a second alarm.

(The trash fire and important principles for operating at such emergencies will be described in a subsequent issue.)

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MISCONCEPTIONS

Continued from page 960

is combustible. The incombustible type, has a U.L. flame spread rating of from 5 to 20, depending on the particular manufacturer and on the character and arrangement of the backing supports and easily meets the flame spread requirements for required corridors and exitways in unsprinklered buildings.

The combustible type varies in flame spread characteristics. Some of the older types of tile, especially where they have been in service for a long period of time, undoubtedly have a flame spread rating in excess of 200. However, since 1953, the insulation board industry has standardized on a procedure of applying a factory finish coating to the exposed face of all combustible tile which has consistently given test results of less than 200 flame spread (standard tunnel tests conducted by Southwest Research Institute). This type of tile may be considered as satisfactory for installation in sprinklered schools or in those areas of unsprinklered schools which do not require a rating of 75 or less as long as it is applied directly to a solid incombustible support. However, if the tile is fastened to nailing strips, or in such a manner as to create a concealed space on the back side, then adequate fire stopping must be provided to restrict the possibility of fire spread on the unexposed uncoated side, as required by modern building codes.

It is also possible to apply one of various U.L.-approved fire retardant paints to combustible acoustical tile to reduce its flame spread characteristics below 75. This can be accom-

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ARMY DUCK
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plished if the tile has at least ½-inch nominal thickness and is fastened directly to a solid incombustible surface or otherwise properly installed and fire-stopped on its back surface. Thus, it is possible to treat a considerable amount of the combustible tile already installed in existing school buildings to such an extent that it will meet the interior finish requirements for corridors, exitways and large-capacity rooms.

In certain instances, it is not physically possible, or economically or functionally practical, to enclose all stairways in existing school buildings. In such cases, it is imperative that a complete automatic sprinkler system installation be provided or a direct exit to the outside for each classroom be provided. Results obtained from the Los Angeles tests indicate that a fire occurring in a building having open stairways and only partial sprinkler protection develops sufficient heat, smoke and steam in corridors to make them untenable within a few minutes in those cases where no sprinkler protection is available over the seat of the fire. These results confirm what many fire protection engineers have always maintained that a partial sprinkler installation gives only partial protection to the building and questionable protection to the occupants.

Alternate egress important

Because of the difficulty in achieving adequate sprinkler system maintenance in schools or other public buildings, and because of the possibility that a smouldering fire might give off considerable smoke before sufficient heat is built up to actuate the sprinkler system, it is important that an alternate means of egress be provided for all occupants in such a manner that they will not have to traverse through the open corridors and exitways to reach the outside of the building. This can be accomplished by providing doors between adjacent classrooms which give access to exterior fire escapes and/or to any enclosed interior stairways which can be utilized.

Experience has shown that most large-loss-of-life fires have been caused by several independent factors—not one. Prominent among these have been delayed discovery, a combination of several structural deficiencies, and a lack of proper instruction to operating personnel regarding evacuation and fire department alarm transmission. All these factors must be recognized, and adequately cared for by an enlightened public. It's time to implement the knowledge we have, for constructive action. □□

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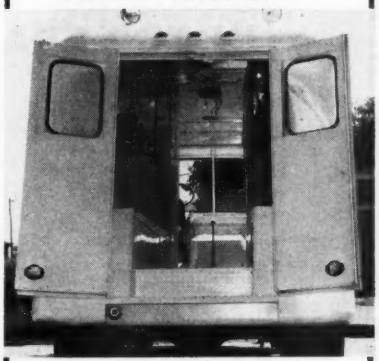

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Four sets of splints, one set basket splints, two rigid stretchers, two collapsible stretchers, Minuteman Resuscitator with two heads and extension hose, hydraulic jack, complete maternity kit, gas masks, flood light with 100 foot extension, hux bar, wrecking bar, pinch bar, axe, shovels, bolt cutters, hand saw, hot stick, small hand tool kit, fire blanket, fire extinguishers, hot water bottles, ice packs, blankets, sheets, pillow. Other equipment includes two very complete first aid kits.

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SINCE 1836

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OCTOBER, 1960

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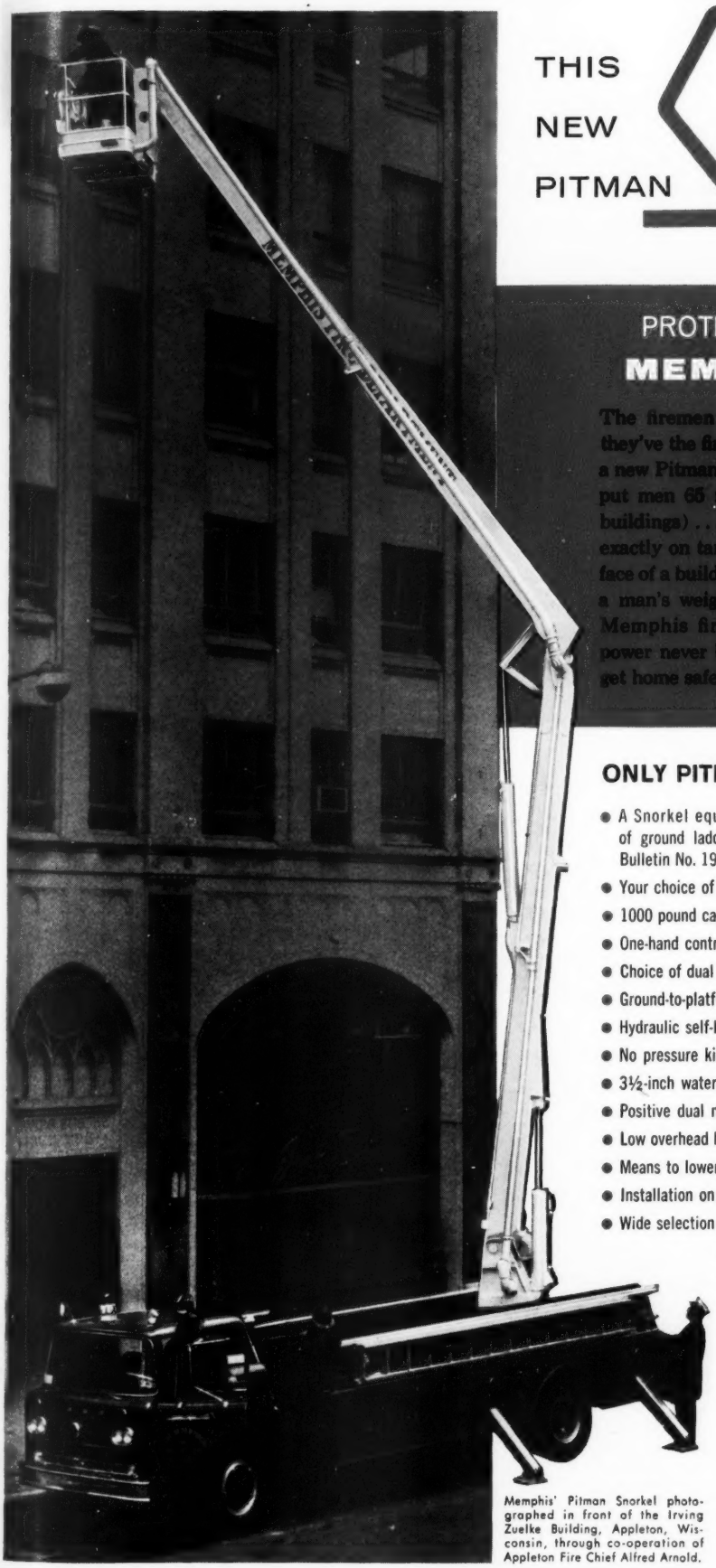

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